



Administrator  
Department of Environmental Quality  
Enforcement Division  
1520 E. Sixth Avenue  
P. O. Box 200901  
Helena, Montana 59620-0901

March 12, 2008

VIA HAND DELIVERED

RE: 2008 Cleaning and Demolition Project, Asarco East Helena Plant

Dear Gentleman:

On October 2, 2007, Asarco and the Montana Department of Environmental Quality (Department) entered into an Administrative Order on Consent, Docket No. HW-07-01 (Order), to continue Asarco's cleaning and demolition program established under the 2005 Consent Decree. The Order requires Asarco to develop and implement yearly work plans for calendar year 2007-2012 to remove, store, and proper dispose or recycle of all remaining hazardous waste and/or secondary material located in process units, pollution control devices, and storage units and other identified areas of the East Helena Plant.

Attached is the 2008 Cleaning and Demolition Project that describes the management activities for calendar year 2008. The attached 2008 Cleaning and Demolition Project contains two sections, both of which are included within the attached three-ringed binder. The first section contains an introduction, project summary, and reporting while the second section contains the URS 2007 Work Plan.

Asarco intends to begin the work outlined in the attached 2008 Cleaning and Demolition Project on or before June 11, 2008. Asarco is awaiting EPA review and approval of the Cover System Design Report and the February 2008 Interim Measure Addendum Work Plan. The completion schedule for all three Work Plans directly support each other and must be implemented collectively to achieve prescribed objectives. If EPA final approval of the Cover System Design Report and February 2008 Interim Measure Addendum is not obtained by May 1, 2008, Asarco cannot proceed with its overall described program.

We look forward to working with the Department as we proceed with the project. If you should have any questions regarding this Project, please contact me at 227-4529.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jon Nickel".

Jon Nickel

Enclosure  
Cc: RCRA Project Manager

---

**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT  
INTRODUCTION, PROJECT SUMMARY, AND REPORTING**

Prepared by:  
**ASARCO LLC**  
P.O. Box 1230  
East Helena, MT 59635

**AND**

**2008 WORK PLAN**

Prepared by:  
**URS Corporation/Cleveland Wrecking Company**  
614 East Edna Place  
Corvina, CA 91723

**March 12, 2008**

---

---

**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT  
INTRODUCTION, PROJECT SUMMARY, AND REPORTING**

Prepared by:  
**ASARCO LLC**  
P.O. Box 1230  
East Helena, MT 59635

**AND  
2008 WORK PLAN**

Prepared by:  
**URS Corporation/Cleveland Wrecking Company**  
614 East Edna Place  
Corvina, CA 91723

**March 12, 2008**

---

---

**2008 CLEANING AND DEMOLITION PROJECT WORK PLAN**  
**ASARCO EAST HELENA PLANT**  
**INTRODUCTION, PROJECT SUMMARY, AND REPORTING**

Prepared by:  
**ASARCO LLC**  
P.O. Box 1230  
East Helena, MT 59635

**March 12, 2008**

---



## TABLE OF CONTENTS

LIST OF TABLES .....	ii
LIST OF APPENDICES .....	iii
1.0 INTRODUCTION .....	1
2.0 PROJECT SUMMARY .....	3
3.0 MANAGEMENT OF REMOVED MATERIALS .....	3
4.0 INTERIM MEASURE PROGRAM .....	3
4.1 Final Cleaning Action .....	4
4.2 Backfill Locations and Fumed Slag Composition .....	5
4.3 Location of Interim Caps .....	5
4.4 Interim Cap Techniques, Procedures and Materials .....	5
4.5 Maintenance of Interim Cap .....	6
4.5.1 Site Inspection .....	6
4.5.2 Site Security .....	6
4.5.3 Site Maintenance .....	7
4.6 Departmental Inspections and Confirmation .....	8
5.0 REPORTING .....	8
5.1 Quarterly Reporting .....	8
5.2 Annual Reporting .....	9
6.0 REFERENCES .....	9

## LIST OF TABLES

TABLE 4-1. PRIORITY OF MAINTENANCE TASKS .....	7
TABLE 4-2. EMERGENCY NOTIFICATION CONTACTS AND PHONE NUMBERS .....	8

## LIST OF APPENDICES

APPENDIX A COMPREHENSIVE LIST OF PROCESS UNITS AND OTHER AREAS OF INTEREST  
(MARCH 2008)

APPENDIX B FUMED SLAG ANALYTICAL DATA

APPENDIX C EXAMPLE INSPECTION FORM

# **2008 CLEANING AND DEMOLITION PROJECT WORK PLAN**

## **ASARCO EAST HELENA PLANT**

### **INTRODUCTION, PROJECT SUMMARY, AND REPORTING**

#### **1.0 INTRODUCTION**

---

Asarco Incorporated, now known as ASARCO LLC (Asarco), and the Montana Department of Environmental Quality (Department) entered into a 2005 Consent Decree (2005 Decree), on February 15, 2005, to resolve alleged violations of the Montana Hazardous Waste Act (MHWA) and Administrative Rules of Montana (ARM). The 2005 Decree required Asarco to develop and implement yearly Work Plans designed to remove, store, and properly dispose or recycle all remaining hazardous waste and recyclable materials from identified process units located within Asarco's East Helena Plant. The department acknowledges that Asarco accomplished all of the activities contained in the 2005 Decree Work Plans, except for removing and properly disposing hazardous waste being stored in Subpart DD containment structures, cleaning the thawhouse building, and cleaning of certain portions of the acid plant contact section.

On October 2, 2007, Asarco and the Department entered into a 2007 Administrative Order on Consent (2007 Order), which allows Asarco to continue with the cleanup processes established under the Work Plan provisions of the 2005 Decree. The 2007 Order requires Asarco to develop and implement a yearly Work Plan for calendar years 2007-2012 to remove, store, and properly dispose or recycle all remaining hazardous waste and/or secondary material located in the process units, pollution control devices, and storage units and other identified areas of the facility. To the extent that Asarco disposes of hazardous waste and/or secondary material, it will do so either by removal to an approved CAMU at the facility or by removal to another facility according to proper regulatory procedures under MHWA or its regulations there under.

Asarco submitted and completed the provisions outlined in the August 2007 Cleaning and Demolition Work Plan, as further defined as the Phase IV, Stage 1 area. The March 2008 Comprehensive List of Process Units and Other Areas of Interest describes the past cleaning efforts already undertaken at the East Helena Plant. A copy of the March 2008 Comprehensive List of Process Units and Other Areas of Interest is attached as Appendix A. Asarco recognizes that this comprehensive list may need to be modified as a result of future investigations and/or inventories. This list does not necessarily constitute a complete inventory of areas of interest (AOIs) at the smelter complex, nor does it describe the current clean-up status at these areas. The Department shall maintain, on file, a complete inventory of AOIs and their current clean-up status. The 2008 Cleaning and Demolition Project Work Plan builds upon Asarco's past efforts for removing and properly managing materials.

The 2008 Cleaning and Demolition Project Work Plan describes the management activities scheduled for this calendar year. Asarco has selected URS/Cleveland Wrecking Company (URS/CWC) to conduct the 2008 Cleaning and Demolition Work Plan, which is contained within this submittal. For the

purposes of this 2008 Cleaning and Demolition Project Work Plan, the environmental cleaning, demolition, and handling procedures are primarily highlighted. URS/CWC will employ a systematic approach for cleaning, demolition, hauling, and disposition of the removed materials from identified process locations. The specific work practices associated with these activities are fully described within the accompanying URS/CWC Work Plan.

On February 13, 2008, Asarco submitted the Cover System Design Report to EPA. On February 26, 2008, Asarco submitted the Interim Measures Addendum Work Plan (Demolition Foot Print Exposed Areas Soil Sampling, Excavation, and Confirmatory Sampling Work Plan and Blast Furnace and Monier Flue Cleaning, Demolition, and Soil Sampling Work Plan) to EPA. The ability to execute this 2008 Cleaning and Demolition Project Work Plan is dependent upon sequencing the implementation of these two previously submitted Work Plans. EPA must provide approval of these two Work Plans no later than May 1, 2008 for the 2008 Cleaning and Demolition Project Work Plan activities to proceed. If EPA approval is received on or before May 1, 2008, Asarco will mobilize and begin the 2008 Cleaning and Demolition Program on or before June 11, 2008.

To facilitate removal of material under this Work Plan, Asarco has prepared the following decision matrix table to determine the priority in managing removed material from the East Helena Plant.

#### DECISION MATRIX FOR MAJOR PROCESS LOCATIONS

Process Location	Criteria For Prioritizing Management of Recyclable material			
	Level of Contamination	Volume of Recyclable material	Degree of Exposure	Condition of Structures
Non-Production	Low	Low	Low	Good
Tanks	Low	Low	Moderate	Good
Ore Storage	Low	Low	Low	Good
Ore Receiving	Moderate	Moderate	Low	Good
Sinter Plant	Moderate	High	Low	Fair
Acid Plant	Moderate	Moderate	Low	Good
Blast Furnace	Moderate	Moderate	High	Fair
Dross Plant	High	High	Moderate	Good
Former Zinc Plant	High	Moderate	High	Poor
Water Treatment	Low	Moderate	Low	Good

The materials from the process locations that are shaded in the preceding matrix table were removed under the previous cleaning and demolition work plans, with the exception of the contact section of the acid plant, which is scheduled for cleaning and demolition in 2008. Based upon the process locations that have not been completed, Asarco proposes to focus the 2008 Cleaning and Demolition Project activities within the areas further described in the accompanying URS/CWC Work Plan.

## 2.0 PROJECT SUMMARY

---

### Phase IV, Stage 2 Work Areas

The Phase IV, Stage 2 work areas contain structures that must be cleaned and demolished in order to facilitate construction of the 2008 cover system and to address the structures that contain the remaining process materials, as further described in the following table.

#### Phase IV, Stage 2

- |                              |  |
|------------------------------|--|
| ○ Blast Furnace Flue         | ○ Truck Loading & Spray Dryer Building |
| ○ Acid Plant Cooling Towers  | ○ Sand Filters                         |
| ○ 400' D&L Stack             | ○ 200' Acid Stack                      |
| ○ Acid Plant Contact Section | ○ Monier Flue                          |
| ○ Blast Furnace Baghouse     | ○ 425' Blast Furnace Stack             |
| ○ Ore Unloading Bins         | ○ Sample Mill                          |
| ○ Crushing Mill              | ○ Auto Shop                            |
| ○ Pump Tank Building         | ○ Main Blower Building                 |
| ○ Acid Plant Shop            | ○ Ringling Dust Building               |

Asarco originally anticipated including the cleaning and demolition of the blast furnace flue and Monier flue within the 2008 Cleaning and Demolition Project Work Plan. However, on March 29, 2007, EPA requested that Asarco prepare a separate interim measures (IM) work plan for these flue systems. On February 26, 2008, Asarco submitted an Interim Measures Work Plan Addendum to EPA that included: 1) existing soil data, 2) demolition footprint exposed soils sampling, and 3) exposed soils removal criteria and confirmatory sampling. This IM Work Plan will govern all future actions within these flue systems.

## 3.0 MANAGEMENT OF REMOVED MATERIALS

---

To the extent that Asarco disposes of hazardous waste and/or secondary material, it will do so either by removal to the approved CAMU Phase 2 cell at the facility or by removal to another facility according to proper regulatory procedures under MHW or its regulations there under.

## 4.0 INTERIM MEASURE PROGRAM

---

On May 5, 1998, ASARCO and the United States Environmental Protection Agency (EPA) entered into a Consent Decree (RCRA Consent Decree, U.S. District Court, 1998) to initiate the corrective action process in accordance with the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA). A major area of overlap between the RCRA Consent Decree and the Administrative Order on Consent involves the backfilling and interim capping of areas in which cleaning and demolition had occurred and where exposed soils were present.

On February 13, 2008, Asarco submitted to EPA the Cover System Design Report that presented the conceptual design for a site wide cover system at the East Helena Plant. The Cover System Design Report presents a conceptual design for a site facility cover system for the East Helena Plant. This system is presented as an interim action that will ultimately become part of the permanent remedy when remaining RCRA Consent Decree activities, including the Phase II RFI and Corrective Measures Study have been completed, and the final remedy for the site has been selected. Asarco proposes to proceed with the construction of the overall cover system in incremental phases. For 2008, the cover system will only be constructed in areas impacted by the 2008 cleaning and demolition program, eliminating the need for placement of interim caps in these areas. Future cover system construction will occur in similar stages. Sheet Number 13 of the attached URS/CWC 2008 Cleaning and Demolition Work Plan illustrate the areas in which the permanent cover system is being proposed following the 2008 cleaning and demolition. Asarco intends to address the permanent cover system and interim capping by:

- Implementing the Cover System Design Report components for the majority of areas subject to the 2008 Cleaning and Demolition Work Plan;
- Identifying the locations in which backfilling using fumed slag may be required to achieve proper site stabilization and drainage prior to installing the interim cap;
- Presenting the locations that will require interim capping;
- Providing the interim capping techniques, procedures, and materials that will be used to inhibit infiltration of precipitation within the demolition areas; and
- Outlining the general, short-term maintenance for the interim cap.

The 2008 Cleaning and Demolition Project Work Plan involves removing structural components to existing building grade. The remaining features, including existing foundations and concrete slabs that are not removed, will be incorporated under a Cover System or an interim cap.

The areas subjected to 2008 Cleaning and Demolition Project Work Plan will undergo final cleaning (see Section 4.1). Select areas may be backfilled with fumed slag to achieve proper drainage prior to installing the interim cap (Section 4.2). The locations requiring interim capping will be identified (Section 4.3) and the techniques, procedures, and material used for installing will be outlined (Section 4.4). The general, short-term maintenance of the interim cap will be necessary to ensure integrity (Section 4.5).

#### **4.1 Final Cleaning Action**

The final cleaning of the 2008 Cleaning and Demolition Project will involve a three-phased approach. First, the exposed concrete footprint will undergo a rough cleaning using conventional scraping and shoveling methods. Although this cleaning technique provides an efficient method for removing residual materials, it cannot achieve the prescribed level of cleanliness. To supplement conventional cleaning methods, the concrete footprint will be mechanically swept. The use of the mechanical sweeper will remove surface materials that may not be completely removed using conventional cleaning techniques. Finally, the concrete footprint will be cleaned using a high-velocity vacuum. This final cleaning method will remove any fine material, particularly along the interfaces between the concrete floor and building columns, fan foundations, and support walls.

## 4.2 Backfill Locations and Fumed Slag Composition

Once final cleaning activities are complete, certain areas may be graded and, as necessary, backfilled to achieve proper drainage prior to placement of the permanent cover system or an interim cap. Asarco will use on-site fumed slag as backfill. The fumed slag may be placed in areas that are below grade or require drainage assistance. The fumed slag will serve as the subgrade for the interim cap, over which an engineered cap comprised of non-woven geotextile and RPE will be placed. The fumed slag has been used as a grading material at the plant site in the past and possesses good physical characteristics for fill or sub-foundation uses (granular material and compacts wells). Although fumed slag contains elevated total metal concentrations, the metals are bound in a silicate-iron matrix with characteristics of low metal leachability. The potential for metal migration from the fumed slag is low. In response to EPA's July 6, 2006 comments, Asarco provided the rationale for using fumed slag for backfilling purposes, including study results derived from the RCRA Consent Decree investigations. The slag-related investigative results contained in the Current Condition Release Assessment (CC/RA, January 1999) and qualitative analyses of fumed slag (May 2001) are attached in Appendix B. In April 2005, Department representatives collected fumed slag samples from the East Helena Plant to assess the potential environmental impacts from its use as an iron substitute within the cement manufacturing industry. A copy of the Department's April 2005 fumed slag sampling event results is attached in Appendix B. A July 2006 Department Environmental Impact Statement (EIS) contains additional slag related information.


Most, but not all of the footings or similar structures encountered during the implementation of the Work Plan will be brought to grade. Most of the concrete, asphalt slabs, and some interior wall and/or footings will remain in place. The presence of above ground concrete, asphalt, walls, or footings will not compromise nor impair the ability to achieve proper drainage.

## 4.3 Location of Interim Caps

Once the required backfilling has occurred, certain areas will be covered (final cover system) or capped to control drainage and potential infiltration from precipitation and run-on within the newly exposed footprints. The described capping is considered a precautionary, interim measure. The capping techniques, procedures, and materials are designed to control drainage, potential infiltration, and run-on until the final cover system is constructed. Although the capping program is interim, it is possible that many of the features such as placement of the fill material and interim caps will remain in place even after a final remedy is implemented. Sheet number 13 of the attached URS/CWC 2008 Cleaning and Demolition Work Plan illustrates the areas in which interim capping will be placed following the 2008 cleaning and demolition.

## 4.4 Interim Cap Techniques, Procedures and Materials

In areas where the final cover system is not immediately constructed, interim caps will be constructed within certain exposed footprints in the demolition areas. The interim cap details and specifications are illustrated within the attached URS/CWC 2008 Cleaning and Demolition Work Plan, Sheet number 14. In general, from the top down, the interim cap will consist of the following:

- 
- Sand bags to hold down the interim cover during windy periods;
  - A 24-mil reinforced polyethylene (RPE) with the PRE seams overlapped 3 inches and sewn;

- A minimum 10 ounce non-woven geotextile;
- A prepared sub-grade consisting of fumed slag fill for grading purposes; and
- Existing soils, concrete slabs and/or concrete foundations.

## **4.5 Maintenance of Interim Cap**

### **4.5.1 Site Inspection**

Periodic inspections of the interim cap will be conducted to ensure that the interim cap systems are performing adequately and to identify problems and provide proper maintenance of interim cap systems. The inspection program will involve three types of inspections: (1) informal inspections, (2) periodic technical inspections, and (3) special inspections after extreme events.

The informal inspection is actually a continuing effort by on-site personnel, performed in the course of their normal duties. Periodic technical inspections and inspections after extreme events will be performed by onsite Asarco staff (or other technical representatives) familiar with the design and construction of the capping systems. The periodic technical inspection will be performed monthly to document the condition of the cap components. Special inspections are very similar to periodic technical inspections but are performed only after an extreme event such as a rare rainstorm, tornado, or earthquake.

The inspection of the interim cap system will typically involve walking the entire site in a systematic fashion that ensures a comprehensive review. If any problem or deficiency is found, the inspector should record the location on a field sketch. A complete description of the affected area, including all pertinent data (i.e., size of the area and other descriptive remarks such as exposed synthetic materials) should be recorded on the appropriate reporting forms. An accurate and detailed description of observed conditions will enable a meaningful comparison of conditions observed at different times.

Photographs may be helpful in documenting problems. Provisions should be made to keep a photographic log of problems, repairs, and general site conditions. This log will provide valuable information when evaluating the performance of the interim cap system and when planning repair strategies.

It is important to have a record of site conditions at various stages after capping. Good documentation will provide valuable information to help maintenance and repair planning. Inspection checklists to assist in the inspection and documentation procedures should be developed and modified as needed throughout the interim capping period. The checklist will (at a minimum) contain items to evaluate such as membrane condition, sand bag condition, liner seams, liner/concrete attachments and site drainage. A copy of an example inspection form is attached in Appendix C.

### **4.5.2 Site Security**

The interim cap will be contained within the fenced Asarco facility and will be kept secured so that people or animals do not disturb the interim cap. Site access by ongoing plant or demolition operations will be limited through the use of barricades, barrier tape, or temporary fencing. Plant personnel will advise contractors conducting site activities of access limits within or near capped areas.



### 4.5.3 Site Maintenance

As shown in Table 4-1, there are four different types of maintenance tasks listed by priority rather than by frequency. Table 4-1 is provided as a guide to prioritize the different types of maintenance activities in proper perspective. The different types of maintenance are also discussed in the following subsections.

**TABLE 4-1. PRIORITY OF MAINTENANCE TASKS**

Priority	Type of Maintenance	Description and Example
1	Emergency	A situation requiring immediate attention (for example, fire or flood).
2	Preventative	Scheduled inspection and minor repairs carried out during inspection (for example, cleaning of membrane liner).
3	Corrective	Corrective maintenance required as a direct result of scheduled inspection (for example, repair of torn membrane liner).
4	Housekeeping	Routine housekeeping of buildings and grounds (for example, disposal of debris and general housekeeping).

1. Emergency maintenance - Emergencies are situations arising unexpectedly that require urgent attention. Often, immediate response must be provided to avert potential serious damage. Provisions for emergency repair/damage control activities must therefore be in-place prior to the occurrence. Toward this end, an Emergency Contacts list will be prepared and kept current, and include local emergency response organizations, assigned maintenance personnel, and agency and owner representatives. Table 4-2 provides a partial list of emergency contacts.
2. Preventative maintenance - Preventative maintenance will be performed to extend the life of equipment and structures. With the exception of routine surveillance and inspections, preventative maintenance tasks should be scheduled in accordance with the recommendations of the material and equipment manufacturers. Scheduled inspection and maintenance of all site facilities will help ensure that potential problems are discovered and corrected before they become serious, as well as providing for the performance of periodically required upkeep. During routine inspections, the Asarco personnel should be alert for any abnormal conditions, which could indicate potential problems.
3. Corrective maintenance - Corrective maintenance consists of repair and other non-routine maintenance. Asarco personnel must always be ready to handle these tasks as the need arises. Corrective maintenance procedures should follow the equipment or material manufacturer's recommendations. In planning for the corrective maintenance, arrange for the assistance of an engineer or manufacturer's representative, if necessary.
4. Housekeeping - Maintaining well-kept facilities indicates pride on the part of the Asarco personnel, and provides for good and efficient operations. Well-kept property cultivates good neighbor relations with adjacent property owners. Housekeeping tasks may include collecting/disposing of litter or debris and maintaining access barriers.

**TABLE 4-2. EMERGENCY NOTIFICATION CONTACTS AND PHONE NUMBERS**

<b>General Emergency Numbers</b>	
Fire Department	911
Ambulance	911
Police	911
<b>Corporate Resources</b>	
ASARCO LLC	
Blaine Cox (East Helena Smelter)	(406) 227-4098
Jon Nickel (East Helena Smelter)	(406) 227-4529
<b>Other Resources</b>	
U.S. EPA (24-hour emergency)	(206) 553-1263
Superfund/RCRA Hotline	(800) 424-9346
Hydrometrics, Inc.	(406) 443-4150

#### **4.6 Departmental Inspections and Confirmation**

Asarco will notify the Department within five (5) working days after removal of the material and demolition a specific process unit or areas has been completed. The purpose of this notification is to request that the Department, through its oversight authority, inspect and confirm that the cleaning activity has been performed in accordance with the Work Plan.

These notifications and inspections will allow the Department to document that Asarco has fulfilled all the conditions of the 2007 Order, of which the 2008 Cleaning and Demolition Project Work Plan is a part. The Comprehensive List of Process Units and Other Areas of Interest will be regularly updated after the Department inspects the process units or locations.

### **5.0 REPORTING**

---

#### **5.1 Quarterly Reporting**

Asarco intends to begin the work outlined in this Work Plan on or before June 11, 2008. The schedule to implementing this Work Plan is dependent upon EPA approval of Asarco's Cover System Design Report and Demolition Foot Print Exposed Areas Soil Sampling, Excavation, and Confirmatory Sampling Work Plan and Blast Furnace and Monier Flue Cleaning, Demolition, and Soil Sampling Work Plan. Within 30 days after each calendar quarter (no later than July 31, 2008, October 31, 2008, and, if necessary, January 31, 2009), Asarco will submit quarterly reports that contain the following information:

- a. A description of the portion of the Work Plan completed;
- b. Summaries of all deviations from the approved Work Plan during the reporting period;
- c. Summaries of all problems or potential problems encountered during the reporting period;
- d. Projected work for the next reporting period;

- e. Documentation of all shipments of recyclable material and hazardous waste off-site including shipping papers such as manifests (if required); and
- f. Description of each shipment of reclaimed or recycled material made during the preceding quarter indicating how the material is managed, handled, or treated for recovery or recycling that demonstrates that it has value. The information to be submitted to the Department in making a successful stewardship demonstration is: (1) acceptance criteria required by the receiving facility (expressed as a minimum threshold of recoverable metals and maximum allowable toxic metals), (2) a demonstration that the receiving facility is in compliance with all applicable environmental requirements, (3) a copy of the contractual agreement between Asarco, its broker and the receiving facility, (4) the name of the state or provincial regulatory contact and facility contact.

Quarterly reports will not be required after submittal of the 2008 Work Plan Completion Report.

## **5.2 Annual Reporting**

Within thirty (30) days, but, no later than January 31, 2009, after Asarco concludes that it has fully implemented the materials removal outlined in the 2008 Cleaning and Demolition Work Plan, Asarco shall submit a 2008 Work Plan Completion Report to the Department. The contents of the Work Plan Completion Report will include:

- a. A description of the cleaning efforts conducted;
- b. If applicable, documentation of all shipments of recyclable materials and/or hazardous wastes;
- c. Summaries of all problems or potential problems encountered during the reporting period; and
- d. Certification that the Work Plan has been fully implemented.

## **6.0 REFERENCES**

---

ASARCO LLC, 2008. ASARCO East Helena Smelter 2008 Interim Measures Work Plan Addendum. Demolition Foot Print Exposed Areas Soil Sampling, Excavation, and Confirmatory Sampling Work Plan and Blast Furnace Flue and Monier Flue Cleaning, Demolition, and Soil Sampling Work Plan, February 2008.

Hydrometrics, Inc., 1999. Interim Measures Work Plan, East Helena Facility, April 1999, Revised July 1999. Includes Volume II, Corrective Action Management Unit Design Report.

Hydrometrics, Inc., 2000. RCRA Facility Investigation Work Plan, East Helena Facility, March 2000.

Hydrometrics, Inc., 2008. ASARCO East Helena Smelter Cover System Design, February 2008.

---

**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT  
2008 WORK PLAN**

Prepared by:  
**URS Corporation/Cleveland Wrecking Company**  
614 East Edna Place  
Corvina, CA 91723

**March 12, 2008**

---

## TABLE OF CONTENTS

LIST OF ATTACHMENTS .....	iii
1.0 INTRODUCTION .....	1
1.1 Purpose of the 2008 Cleaning & Demolition .....	1
1.2 Site Location and Description .....	1
1.3 Pre-Construction Activities .....	2
1.4 Mobilization .....	5
1.5 Personnel Decontamination Areas .....	6
1.6 Temporary Conveyance Systems For Surface Water .....	6
1.7 Demolition Salvage Staging and Loading Areas .....	6
1.8 Demobilization and Contract Close-Out .....	6
2.0 HAZARDOUS MATERIALS REMOVAL AND HANDLING PROCEDURES .....	6
2.1 Lead and Heavy Metal Dust and Debris Removal .....	7
2.2 Catalyst Converter Vessel and Acid AST Decontamination .....	7
2.3 Stack Cleaning .....	8
2.4 Removal of Oils from Site Equipment (If Discovered) .....	8
2.5 Universal Wastes (If Discovered) .....	8
3.0 ASBESTOS ABATEMENT METHODS .....	10
4.0 UTILITY DISCONNECTS .....	10
5.0 DEMOLITION ACTIVITIES .....	11
5.1 General .....	11
5.2 Isolation Activities Before Demolition Of Structures .....	11
5.3 Demolition of Buildings and Structures .....	12
5.4 Stockpiling .....	14
5.5 Debris Transportation .....	15
5.6 Plug And Abandon Underground Piping .....	15
5.7 Capping of Demolished Areas .....	16
5.8 Equipment .....	17
5.9 Storm Water Pollution Prevention Plan .....	17

6.0 DUST CONTROL PLAN .....	18
6.1 Application With Water During Demolition .....	18
6.2 Dust Control During Stack Demolition .....	19
6.3 Dust Control During Loading and Debris Transportation .....	19
6.4 Dust Suppressant .....	19
6.5 Area Control .....	20
6.6 Water Source .....	20
6.7 Field Quality Control.....	20
6.8 Overall Dust Control Application .....	20
7.0 WASTE MANAGEMENT PLAN .....	20
7.1 Waste Scenarios.....	21
7.2 Description of Solid Waste Disposal Options .....	21
7.3 Management of Non-CAMU Waste Streams.....	21
7.4 Labeling of Waste .....	22
7.5 Management of CAMU Approved Waste.....	22
7.6 Waste Management Quality Control .....	22

## LIST OF ATTACHMENTS

ATTACHMENT A	CONSTRUCTION DOCUMENT DRAWINGS (SEPARATE DOCUMENT SET)
ATTACHMENT B	CONSTRUCTION SCHEDULE
ATTACHMENT C	IRS ENVIRONMENTAL HAZARDOUS MATERIALS ABATEMENT PLAN
ATTACHMENT D	DEMOLITION AREA CAP INFORMATION

# **2008 CLEANING AND DEMOLITION PROJECT**

## **ASARCO EAST HELENA PLANT**

### **2008 WORK PLAN**

#### **1.0 INTRODUCTION**

---

##### **1.1 Purpose of the 2008 Cleaning & Demolition**

URS / Cleveland Wrecking Company (URS/CWC) has prepared this Cleaning & Demolition Work Plan, hereafter referred to as the Work Plan, for the purpose of providing a description of asbestos abatement, environmental cleaning, demolition, and waste handling procedures, which URS/CWC will be implementing during on-site activities in the 2008 calendar year. This Work Plan has been prepared in accordance with the Construction Documents for the "2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project" of the ASARCO East Helena Plant located at 100 Smelter Road in the City of East Helena, Montana. The procedures described in the Work Plan comply with the Construction Documents and all Federal, State, and local governing regulations.

##### **1.2 Site Location and Description**

The ASARCO East Helena facility is a former lead smelter located on approximately 141 acres. The facility is surrounded by agricultural property on the west; Prickly Pear Creek and agricultural property on the east; Montana Highway 12 and residential properties to the north; and Prickly Pear Creek and agricultural property to the south. A site vicinity map is shown Sheet 1 and a site plot plan is shown on Sheet 2 of the Construction Document Drawings, which are included as Attachment A.

The abatement, environmental cleaning, and demolition activities at the site have been broken into two areas: Stage 1 and Stage 2. Stage 1 and Stage 2 have been labeled as Phase IV demolition activities. The Phase I, II, III, and Phase IV, Stage 1 structures have been previously abated, cleaned, and demolished in previous years. The Phase IV, Stage 2 structures will be addressed in 2008, with some of the abatement and cleaning activities having already been completed in 2007. The various areas referenced consist of the following structures:

##### **Phase IV, Stage 2**

- |                              |  |
|------------------------------|--|
| ○ Blast Furnace Flue         | ○ Truck Loading & Spray Dryer Building |
| ○ Acid Plant Cooling Towers  | ○ Sand Filters                         |
| ○ 400' D&L Stack             | ○ 200' Acid Stack                      |
| ○ Acid Plant Contact Section | ○ Monier Flue                          |
| ○ Blast Furnace Baghouse     | ○ 425' Blast Furnace Stack             |
| ○ Ore Unloading Bins         | ○ Sample Mill                          |
| ○ Crushing Mill              | ○ Auto Shop                            |
| ○ Pump Tank Building         | ○ Main Blower Building                 |
| ○ Acid Plant Shop            | ○ Ringling Dust Building               |

On March 29, 2007, EPA requested that Asarco prepare a separate interim measures work plan for the cleaning and demolition of the blast furnace flue and Monier Flue. On February 26, 2008, Asarco submitted to the EPA the 2008 Interim Measures Work Plan Addendum (Demolition Foot Print Exposed Areas Soils Sampling, Excavation, and Confirmatory Sampling Work Plan and Blast Furnace Flue and Monier Flue Cleaning, Demolition and Sampling Work Plan). The cleaning and demolition of the blast furnace flue and Monier flue will be conducted by URS using the procedures outlined in this Work Plan.

### **1.3 Pre-Construction Activities**

Prior to the initiation of field operations, the following preconstruction tasks will be completed:

- Site-Specific Health and Safety Plan (HSP);
- Detailed Construction Schedule;
- Establishment of storm water and run-off precautionary measures
- Establishment of administrative offices, staging areas; personnel decontamination facilities;
- General construction permitting will be completed prior to on-site activities; and
- A preconstruction meeting will be held with ASARCO personnel and/or appointed representatives.

#### **Site-Specific Health and Safety Plan**

As required, a site-specific Health and Safety Plan (HSP) has been developed and approved for this project. The purpose of the plans will be the protection of personnel and the environment on-site, as well as the general public and environment in adjacent properties and neighborhoods. The site-specific Health and Safety Plan will be enforced within site boundaries at all times. Tailgate safety meetings will be held at the beginning of every work shift; during new phases of operation; at the time new personnel are introduced to the site; and when site conditions warrant such meetings. These meetings will identify potential workplace hazards and problems so that appropriate control measures can be implemented. The HSP will establish procedures and address emergencies that may arise during all site activities. Emergency vehicular access, evacuation procedures, and a listing of all contract personnel with phone numbers have been included in the HSP.

Detailed, specific health and safety issues related to the former processing, storage, and material handling areas within the Facility, will be identified by the URS/CWC Health and Safety Officer.

For those employees to be certified to participate in abatement and environmental activities, employee certifications will be kept on file in the project field office. Employee training requirements will meet the requirements as specified in the Construction Documents and as restated below:



Type	Required Environmental Health and Safety Training	General Work Tasks
GROUP A	None	General Work Force -- Off Plant
GROUP B	No 40 Hr OSHA	General Work Force --Off Plant
	Blood Lead Tests	General Work Force -- Off-Plant
	No Physical ( <i>There must be a doctor evaluation to wear a respirator</i> )	
	Respirator Fit Test	
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
GROUP C	40 Hr – HAZWOPER-OSHA	Load, Haul, Place and Compact Waste Materials and On-Plant Tasks
	Blood Lead Tests	Demolition
	Full Physical	Cleaning
	Respirator Fit Test	Backfill, Grading, and Excavation
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
	Asbestos - 8 Hr Worker Awareness OSHA	Asbestos Abatement Workers Only

Following is a more specific outline of the various tasks and the associated training required:

TASK for 2008 Cleaning & Demolition Project	Required Environmental Health and Safety Training
Mobilization and set-up field office and related facilities	Group A
Pre Demolition Tasks (Lock and Tag Utilities, Remove Acid Catalyst, etc.)	Group C
Cleaning	Group C
Demolition	Group C
Post Demolition Tasks (Fence, Barricade walkways, Seal flues and ducts, etc.)	Group C
Backfill, Grade, and Excavation	Group C
Extend and Survey Monitoring Wells	Group C
Prepare As-Built Survey	Group C
Final Cleaning	Group C

### Detailed Construction Schedule

A detailed construction schedule has been included in (Attachment B). This schedule includes durations and milestones for all activities anticipated during asbestos abatement; cleaning; structure demolition and salvage; and material handling and transfer. The schedule is in sufficient detail to define the path of the project.

### **Storm Water Prevention Pollution Plan**

The site's existing Storm Water Prevention Plan (SWPPP) will be utilized for this scope of work. This Plan describes storm water prevention procedures to be utilized during the work. In general, storm water runoff is routed to the internal plant water handling system. Storm water and run-off will be directed to the plant water system for treatment via the High Density Sludge (HDS) plant, to be operated by ASARCO personnel.

In areas where cleaning and/or demolition could potentially create dust laden runoff, URS/CWC will protect the drains as necessary to prevent contaminants from entering the system. This protection will consist of a combination of sand bags, hay bales, and filter fabric strategically placed to remove the solids while allowing the storm water and/or run-off to continue to the existing storm water containment and treatment system prior to discharge. URS/CWC will ensure storm water and/or run-off is free of grease and oils by utilizing methods to prevent and promptly clean any oil and grease spills.

### **Site Security**

URS/CWC understands that the facility is currently surrounded by security fencing or structures, which will prevent unauthorized personnel access to the site. URS/CWC will follow sign in procedures and check in at the main facility gate or another gate/entrance specified. URS/CWC will control access to work areas during operating hours through the monitoring of a single ingress/egress location with mandatory sign-in procedures for all personnel. During off-hours, sensitive work areas will be cordoned off with temporary barricades, delineators and caution tape.

During the course of the 2008 cleaning and demolition, structures will be removed that are currently acting as a site "fence." URS/CWC will coordinate activities with its designated fencing subcontractor such that as structures are being demolished, new chain link fence is installed to close the opening created by demolition. In the event that the new permanent fence cannot be completed across the new opening, temporary fence panels on stands will be installed to close the opening. A temporary, delineated barricade will be put in place. The use of A-frame barricades, delineators, and caution tape will further be used to define the facility at these points.

### **Temporary Facilities / Construction Control**

URS/CWC will establish temporary facilities and construction control procedures to be implemented at the project site. ASARCO will provide and URS/CWC will maintain suitable temporary office space to coordinate field construction activities. Adequate sanitary facilities, fences, barricades and scaffolding will be provided as needed. Storage for tools, light equipment and appropriate signs will also be established, as needed, for this project. Temporary services will be coordinated with ASARCO representatives for existing and future construction activities, demolition activities, and site traffic. Safety will be managed, including the monitoring of vehicular and pedestrian traffic and public safety, as needed.

### **Delineation of Work Zones**

Work zones will be established during pre-mobilization planning. In general, this will include the following:

- Lead/Decon exclusion areas;
- Asbestos removal areas;
- Equipment staging areas;

- Personnel decontamination areas;
- Storage areas;
- Demolition and salvage areas;
- Loading areas/staging of off-site waste; and
- Field office/support areas.

### **General Construction Permitting**

The following lists the applicable permits and/or notification that may be obtained or that may need to be notified by URS/CWC and/or ASARCO prior to the initiation of any fieldwork.

#### **State of Montana**

- Montana Department of Environmental Quality (MDEQ).
- Division of Occupational Safety and Health (OSHA) Department of Industrial Relations - Notification of Asbestos Abatement.
- Division of Occupational Safety and Health (OSHA) Department of Industrial Relations - Notification of Demolition Activity S-691.

### **Preconstruction Meeting**

Following the completion of the tasks outlined above, a preconstruction meeting will be held at the facility or other location designated by ASARCO. The purpose of the meeting will be to discuss the Scope of Work and the roles of the parties involved. Details regarding the date that fieldwork will be initiated, site access requirements, hours of operation, deliverables required by ASARCO, and locations of construction equipment, staging and cleaning areas would be discussed. Participants in the meeting will include the ASARCO project team, the URS/CWC project team, and the Montana Department of Environmental Quality.

### **1.4 Mobilization**

Following the preconstruction meeting, work areas will be secured and a central field office will be established. Equipment and materials necessary to complete the project will be moved to the facility and staged at predetermined locations within the facility. In addition to the field office, the following work areas will be established:

- Establishment of on-site electric and water service (as needed);
- Personnel decontamination areas;
- Temporary conveyance systems;
- Equipment lay down areas; and
- Demolition salvage staging and loading areas.

The work areas listed above, as well as, other tasks that will be conducted during the mobilization phase of this project are described in the following sections.

### 1.5 Personnel Decontamination Areas

Personnel decontamination areas will be established for each exclusion zone and work activities that may expose workers to unique safety hazards and/or hazardous levels of chemicals and waste materials. These requirements will be used to determine appropriate personnel protective equipment (PPE) that will be used in each of the separate plant areas during each phase of work. Required PPE, decontamination procedures and personnel decontamination equipment have been identified in the Health & Safety Plan.

### 1.6 Temporary Conveyance Systems For Surface Water

Existing collection trenches and sumps will be used to collect surface water during decon activities. The locations of these trenches and sumps will be confirmed and identified by the URS/CWC, utilizing existing project utility plans, during the pre-mobilization activities as well as throughout the completion of on-site work activities. During collection of surface water, this material will run through ASARCO's current WWT Waste Water Treatment facility (being run and operated by ASARCO). ASARCO will handle materials once it hits the WWT. ASARCO will be responsible for any required waste (water) treatment and disposal permits required on the project.

### 1.7 Demolition Salvage Staging and Loading Areas

Several demolition salvage staging and loading areas will be established for cleaned material and equipment. These areas will be easily accessible to expedite loading and transport activities. Surface cover in these areas will be durable enough to withstand the storage and movement of heavy scrap material without breaking apart and creating difficulties when loading the material or impacting the areas.

### 1.8 Demobilization and Contract Close-Out

Following the completion of all field activities, the site will be cleared of temporary construction facilities as well as the disconnection and removal of temporary power sources. All equipment brought to the jobsite throughout the project will also be removed. A site walk will be conducted with the ASARCO Project Management Team at the completion of demobilization. This site walk will be used to receive closeout of construction activities or identify "punch list items" to be addressed. Following the completion of field activities, URS/CWC will submit to ASARCO any documentation that had not been forwarded to ASARCO on a weekly basis.

## 2.0 HAZARDOUS MATERIALS REMOVAL AND HANDLING PROCEDURES

This section describes the procedures that URS/CWC will employ to remove and/or decontaminate those areas that have been impacted by hazardous substances (heavy metal laden dust, acids, etc.) and/or containing Universal Waste items. Universal waste (UW) includes the removal and packaging of Fluorescent Light Tubes, HID lamps, PCB and non-PCB ballasts, and mercury containing equipment from the 2008 Cleaning and Demolition Project.

As addressed in the ASARCO Project Specifications, URS/CWC will provide the personnel and equipment to perform the necessary waste removals prior to demolition. ASARCO has required that hazardous materials are to be addressed and that the facility will be free of appreciable hazardous materials prior to the initiation of any demolition activities.

Where staged?  
in the diggers?

## 2.1 Lead and Heavy Metal Dust and Debris Removal

Located within the ASARCO facility are areas that have been impacted by lead and other heavy metal dusts and debris, which were utilized and/or were a by-product in the manufacturing of lead bullion. The intent of the interior cleaning is to reduce the potential for fugitive dust emissions during demolition. URS/CWC will take precautions, as addressed in the Site-Specific Health & Safety Plan, when working with and handling heavy metal contaminated materials. The surface areas to be handled due to heavy metal dust and debris contamination will include those areas delineated on Sheet 3 of the Construction Drawings (Attachment A). In general, URS/CWC's method for addressing heavy metal dust/debris removal will consist of:

- Work Area preparation;
- Initial Dry Removal of Bulk Solids; and
- Moistening of Building Interiors for Dust Control.

Work area preparation will consist of delineating a work area that can be both easily contained and is considered a cohesive area unit with like contamination (i.e., Baghouse, Blast Furnace Flue, Monier Flue, etc.). Once the work area has been defined, URS/CWC will begin the removal of bulk solids. The goal of this task will be to remove the gross, dry accumulation of contamination (lead, lead dust, lead debris, acid residues, etc.) at all accessible areas. This will be performed by personnel utilizing hand tools and a trailer mounted "Hurricane" vacuum system with HEPA filtration. Waste will be loaded via air tight chute into appropriate containers (i.e., double 6-mil mega bags, etc.) and hauled directly to the CAMU. This initial removal of the gross, dry accumulation of solids at ground level will ensure a more effective and more controlled method of demolition and overall dust control.

Upon completion of the gross debris removal at ground level, URS/CWC will initiate the pre-wetting and moistening of the building interiors. After review of the building interiors, URS/CWC has determined that accumulated dust on various horizontal surfaces within the interior presents a potential for airborne dust. The purpose of this operation will be to mitigate airborne dust generation during the above grade demolition operation. This pre-wetting activity will be accomplished through a combination of methods, including water hoses, water trucks, and misting systems. URS/CWC realizes that is not feasible to remove all heavy metal laden dust from all surfaces and confined areas prior to demolition. URS/CWC will focus its efforts on mitigating the generation of airborne dust during the demolition and material handling operations.

URS/CWC will utilize the services of a subcontractor, IRS Environmental, to perform the removal of lead and heavy metal laden dust and debris from the subject structures. IRS Environmental has further procedures for this activity as delineated in their "Hazardous Material Abatement Plan" which is provided in Attachment C.

URS/CWC and IRS Environmental have discovered areas within the Blast Furnace and Monier Flues, which do not appear to be structurally sound and present a health and safety hazard for the presence of personnel. Prior to the start of the flue pre-cleaning operation, URS/CWC and IRS Environmental will evaluate the entire flue for these suspect areas and will clearly mark and delineate those areas that are deemed unsafe for working personnel. These delineated areas will not be pre-cleaned as described

above. However, they will be handled and addressed during the normal demolition process. URS/CWC will take extra care and precaution during the demolition of these delineated areas. Demolition will proceed in a controlled manner and additional dust control measures will be implemented during this process.

## 2.2 Catalyst Converter Vessel and Acid AST Decontamination

The Converter Vessel and various acid ASTs (if any) will require cleaning to prevent the generation of airborne dust or acid laden mists that could potentially by an eye, skin, and inhalation hazard. URS/CWC will initiate the decontamination process by removing all solid contents from the tanks and staging for eventual disposal in the CAMU. Catalyst from the Converter vessel will be removed via vacuum truck with personnel entering the vessel utilizing properly planned and coordinated confined space protocol. Catalyst removed during this task will be containerized and hauled directly to the CAMU.

*TS is Disposed where.*

Upon removal of contents from the other acid ASTs (if any), cleaning of the tanks will be conducted by utilizing a high pressure water source to triple-rinse the interior of the tanks. The free liquids and pumpable sludge will be removed from the tanks through a 2-inch or 3-inch vacuum hose into a DOT licensed vacuum truck or 55-gallon drums. Once the triple-rinsing of the tank is complete, rinsates generated from the cleaning process will also be placed into appropriate containers and staged accordingly for disposal by ASARCO. As a precautionary measure, URS/CWC will have available a small quantity of lime rock that can be utilized in the event of an acid release/spill. This lime rock will be used to neutralize any release and will facilitate the overall clean-up of such an event. Additionally, URS/CWC may utilize this lime rock as a means of neutralizing the pH of materials generated during the cleaning and washing process. This procedure could allow for placement of these liquids into the on-site waste water treatment system. *← allowed by permit.*

Upon the completion of the tank cleaning, the tank will be released for general demolition with the resulting metal being staged for salvage.

## 2.3 Stack Cleaning

URS performed the interior wash down of the three (3) concrete/brick chimney stacks (425' Blast Furnace Stack, 400' D&L Stack, and the 200' Acid Stack) in 2007. The work procedures can be found in the 2007 Cleaning and Demolition Work Plan. The methods in which the stack washing materials were managed are discussed in Asarco's 2007 quarterly and annual completion reports.

## 2.4 Removal of Oils from Site Equipment (If Discovered)

*How much removed?*

Located within the facility, miscellaneous equipment is present that utilizes hydraulic oil or other oils in their operating capacity. Upon assessing these units, personnel will clear the area of all obstructions. All electrical service will have been disconnected prior to this time. URS/CWC will locate and coordinate the equipment to remove the oils stored in the reservoir tank or unit itself. Once the reservoir is opened, personnel may utilize mechanical (metal or plastic) hand pumps or vacuum devices to facilitate oil removal. Hand pumps, if used, will pump the oil directly into 55-gallon drums. Drums will be located adjacent to the work area during oil transfer to reduce spillage. Once filled, the drum will be sealed and labeled with the type of substance and location. Absorbent will be available on-site during oil removal and transfer as a contingency in case of spillage. Used absorbent will be placed in a drum labeled "Oily Absorbent" or incorporated into an existing oily absorbent stream generated from general facility decontamination.

URS/CWC will promptly clean up oil and grease spills to prevent contamination of storm water and/or run-off.

## **2.5 Universal Wastes (If Discovered)**

As observed throughout the facility, various Universal Waste (UW) items which although are not considered a hazardous waste, will require special handling and recycling or disposal by EPA and State regulations at a permitted and licensed treatment, storage, disposal facility. Hazardous waste and UW components may include the following items:

- Fluorescent Light Tubes;
- High Intensity Discharge (HID) Lamps;
- Light Ballast containing PCBs;
- Mercury Containing Equipment; and
- Refrigerants (CFCs).

### **Removal of Fluorescent Light Tubes and HID Bulbs**

URS/CWC will ensure that all electrical systems have been deenergized, thus personnel can proceed with the removal of the fluorescent lights and HID bulbs without electrical issues. Once established, the plastic cover of the light fixture, if present, will be removed and placed on the floor, at which time the exposed fluorescent light tubes will be removed by hand and placed in a rubber/plastic container for temporary storage. URS/CWC will utilize rolling scaffolding, man lifts or ladders to support workers on single story floors. For ceilings that are of greater height, a motorized lift will be utilized to assist in retrieving light tubes and other lighting components.

The High Intensity Discharge (HID) bulbs will be removed in the same manner previously outlined for the fluorescent tubes. Removal of the HID bulbs will require the use of motorized boom-lifts in order for personnel to achieve accessing the lamp fixture at much greater heights. HID bulbs will be unscrewed from the lamp housing and placed in cardboard boxes or drums supplied by the receiving facility. The containers will be filled with the bulbs and as they become available, personnel will seal the box and place a label on the box indicating material type and quantity. All storage containers will be relocated to a designated temporary storage area. The fluorescent light bulbs and HID bulbs will be shipped off-site for disposal.

### **Handling of Non-PCB and PCB Ballasts**

After removal of fluorescent light tubes, the protective ballast cover will be removed to access the light ballast for inspection. The inspection will be completed with the fixture in place. Inspection of the light ballast will include careful review of the ballast label to determine if the ballast contains PCBs. If the ballast is not marked "No PCBs" or the label is removed or unreadable, it shall be assumed that the ballast contains PCBs. If the ballast does not contain PCBs, as determined by this definitive visual inspection, the non-PCB ballast will be left in place for demolition.

During removal of the ballast, if any portion of the light fixture is impacted with PCB oil due to leaking, the portion of the impacted fixture may be decontaminated by scraping the oil from the ballast cover. Any generated residue or wiping clothes will be considered PCB contaminated and incorporated into the

drummed ballast waste stream. Once the PCB ballasts have been removed and are staged in a central location, the PCB containing ballasts will be placed in 55-gallon drums for eventual off-site disposal.

### **Mercury Containing Equipment**

Each identified piece of mercury containing equipment designated for removal will be located, isolated, and cleared of all obstructions. Disconnection of the isolated items will proceed utilizing all safety and standard removal procedures for the specific item. Procedures will include lockout/tagout of electrical feed to building or area, cutting electrical lines to the unit, and removing isolated item. As removal of like items proceed, thermostats, thermometers, ignitron tubes, barometers, etc. will be removed, the wires clipped and placed in a 5-gallon spill proof plastic containers containing several inches of absorbent media. This media will cushion the ampules during facility transportation as well as absorb any free-flowing mercury if ampules were to break or leak. In case of a spill or release, URS/CWC personnel involved in the removal and handling of mercury containing equipment will be given a Mercury Spill Response Kit. The mercury containing devices will be shipped off-site for disposal.

### **Refrigerants**

The specific item containing Chlorofluorocarbons (CFC) (i.e., air conditioning units and chillers) will be located and accessed for recovery. The CFC containing equipment will be disconnected utilizing the proper safety and standard removal procedures and evacuated. Air conditioners and chillers will be disconnected from their power sources. URS/CWC will provide certified refrigerant recovery subcontractor to facilitate evacuation and recovery of the refrigerant. URS/CWC personnel will document on an internal waste removal log, the quantity in pounds of CFCs recovered from the various units. Once the unit is cleared, the unit will be tagged with an agreed upon colored tag indicating "CFCs Removed." The methods in which the majority of refrigerants (CFCs) located in the cleaning and demolition areas were managed are discussed in Asarco's 2007 quarterly and annual completion reports.

## **3.0 ASBESTOS ABATEMENT METHODS**

---

Materials located within the facility considered for asbestos abatement include, but are not limited to: rope, tile, mastics, transite panels, window putty, roofing materials, metal panels, etc. URS/CWC will utilize the services of a subcontractor, IRS Environmental, to perform the asbestos abatement activities. Their work procedures and methods are described in their "Hazardous Materials Abatement Plan" which is included in Attachment C.

URS/CWC and its subcontractor, IRS Environmental, performed a majority of the Phase IV, Stage 1 and Stage 2 asbestos abatement activities in 2007. The remaining asbestos abatement activities to be performed in 2008 consist of the removal of asbestos containing siding/panels in the Acid Plant area. Due to the elevated location of and numerous pipe penetrations through these panels, URS/CWC and IRS Environmental will work cooperatively to remove these panels during the course of Acid Plant demolition activities. Special care and precaution will be taken during the demolition process to minimize damage to the panels.

If, during the course of 2008 demolition activities, additional, previously unknown asbestos is discovered, URS/CWC and IRS Environmental will utilize the methods and procedures as described in the "Hazardous Materials Abatement Plan."



## 4.0 UTILITY DISCONNECTS

---

Prior to the initiation of any fieldwork, existing plant utilities and process piping systems will be identified. These procedures will be conducted with URS/CWC survey personnel and the assistance of the designated ASARCO operations person. It will be necessary to lockout most of the utilities and process piping in all areas of the plant prior to cleaning and dismantling. URS/CWC management will determine what systems need to remain active to facilitate the removal of residual products, and cleaning and demolition activities in each of the plant areas.

A detailed description of utility systems lockout protocol is included in the Health and Safety Plan. Lockout procedures will generally include the following objectives:

- Lock-out (close, disconnect, plug, and/or blank) and tagging valves;
- Lock-out and tagging, or disconnection of electrical systems;
- Capping/plugging of storm water lines as necessary to complete work; and
- Documentation of utility caps on Owner supplied facility utility maps.

## 5.0 DEMOLITION ACTIVITIES

---

### 5.1 General

The demolition activities at the site require extensive experience to coordinate services and minimize migration of dust and debris. The demolition of a building can be achieved in a variety of manners depending on the type of structure, reasons for demolition, the proximity to the surrounding structures, safety, and the requirements for salvage or resale. URS/CWC will use a sequence of demolition approach for the major building structure and will compile information from the onsite as-built drawings, and onsite inspections of the buildings to allow our operations and staff to formulate a sequence of demolition of each building to ensure safe working conditions. Typically, this approach involves the dismemberment of the building using breakers, shears, pulverizers, processors or cutting equipment. This technique is generally used on steel and concrete/masonry buildings (spans up to 150 feet) where large shears can cut various members and place the members or drag the members into a staging area where grapple equipment can stack and pile for salvage or further handling.

Our approach focuses on the removal of the bay-to-bay supports (columns and beams), and the flooring and roofing structures in a sequential, controlled manner. This removal approach is excellent when the project requires the salvage of building materials and when dust control requirements warrant a controlled demolition process. Salvage activities including loading, separation, etc. will continue concurrently with the demolition process.

As with every demolition project, the principle considerations are stability of the building structure and the safety of the working personnel and related areas within the collapse envelope of the structures. The following section outlines URS/CWC procedures:

## **5.2 Isolation Activities Before Demolition Of Structures**

Before and/or concurrent with the abatement and removal of regulated wastes, URS/CWC will conduct isolation activities to create a physical separation of the 2008 cleaning and demolition areas from the surrounding structures, piping, items, that are to remain. This will be conducted in a variety of methods employing both excavators equipped with shear attachments and laborers with hand tools and cutting equipment. Prior to initiation of the isolation work, URS/CWC will perform an investigative site walk with ASARCO personnel to re-mark and re-designate the lines of separation between the demolition areas and surrounding areas to remain.

Piping, conduits, and structures that are accessible to an excavator will be selectively sheared at the marked isolation location. The member to be isolated will be cut in such a manner that it will fall away from areas to remain and be protected in place. As members are cut and removed, they will be placed behind the excavator for handling and staging accordingly. Certain piping, conduits, and structures that are not accessible to an excavator that require isolation will be removed by hand using man lifts to position workers with hand tools to cut members free using hand saws or torch cutting equipment. Components will be secured to a crane, forklift or bucket loader and lowered to the ground, or may be allowed to sag to the ground as supports are disconnected.

Upon completion of the isolation task, a physical separation will exist that will ensure areas to remain are protected in place and that the demolition activities can progress unimpeded. Inspection of operations will be conducted by both the Site Superintendent to ensure that exclusion zones are established and that safe working conditions exist at all times. Regular daily safety meetings will be conducted by each foreman to discuss methods, exclusion zones and safety practices. Materials are to be removed from the working area on a daily basis to provide safe working conditions for the men and equipment.

## **5.3 Demolition of Buildings and Structures**

Prior to the above grade structural demolition, the following items will be confirmed complete:

- Decontamination/Cleaning;
- Universal Waste removal; and
- Required interior and exterior asbestos abatement operations.

### **Steel Structure Demolition**

The approach to the building demolition is to use excavators (track-mounted) equipped with specialty attachments (such as shears, breakers and grapples) to structurally remove, bay by bay, the various structural members. The sequence approach is as follows:

- Each structure will be demolished using excavators with specialized attachments. Each truss frame structure between bays will be lowered and/or dropped to the ground by separating the portions of the tension members on the bottom chord to cause the truss to sag in between two bays.
- The excavator will then separate the remaining tension members of the truss to allow one end of the main truss to become separated from the supporting column.

- The other end (still connected) of the truss will be disconnected. The remaining roof transverse trusses, connecting main truss to main truss shall be removed to allow placement of main truss behind the equipment for salvage. The remaining portion of the roof attached to the next bay section will be cut allowing for removal. The excavator will then drag the roof section behind for stockpiling and separation. This process is repeated for each of the numerous bays within each of the above referenced buildings.
- Steel columns will be cut with a shear at the base, and allowed to fall to the ground.

All materials will be staged behind the working areas of the primary excavators, where they will be prepared by additional shears before they are loaded into dump trucks and hauled to the steel staging area just to the north of the Coverall Buildings. Materials will be continuously removed to allow other operations to proceed.

#### **Concrete/Masonry Structure Demolition (Baghouse Bldg., Baghouse Flue, Monier Flue, etc.)**

A 100,000 lb excavator (or larger), equipped with a breaker, and a track loader will be utilized for the complete above grade concrete demolition operations of the various concrete and masonry structures. The exterior walls are constructed of either a concrete block material or a brick material. Starting at one end, URS/CWC will commence breaking from the top of the wall down from column to column. Once complete with the exterior wall at the end, URS/CWC will commence the removal of the concrete upper floor slabs within the same constraints as the wall. This process is limited to the first interior column line. Demolition of the elevated floor slab and walls will be completed in a top down approach for each individual column line. URS/CWC will break the closest interior columns under the roofs and floor, allowing the individual floor to sag. URS/CWC will work into the building, breaking the sagged slabs and allowing the debris to fall to the ground. As floor slabs are removed and area is created in front of the equipment, URS/CWC will continue to break interior columns from the top down.

Once complete for that column line, URS will repeat the same procedure for the remaining column lines. Utilizing a track loader, the broken concrete debris will be removed and hauled directly to the CAMU.

#### **Stack Demolition**

Upon completion of the stack cleaning as described above, URS/CWC, and its subcontractor (Dykon), will commence with the demolition/felling of the stacks by explosives. Prior to Dykon arrival, URS/CWC will remove all flues and equipment servicing the stacks. This will be done with the use of heavy equipment and personnel isolating the stacks as described above.

Upon Dykons arrival, ASARCO, URS/CWC, and Dykon will determine the best area for each individual stack to land. This will be open ground area, mid-point between the areas remaining. A transit will be placed at this point to mark the centerline of the stack. From this point, Dykon will measure  $\frac{1}{4}$  of the circumference in both directions to determine the exact centerline of rotation. Dykon will "layout" the stack according to an engineering analysis and drawing. A transit will be used so that a precision line of fall can be determined. To ensure that enough material will be removed on the fall side, three (3) rows of holes will be drilled on 18" to 22" centers. Past the line of rotation, a triangle area will be outlined by line drilling a series of holes. This area will be removed to insure the stack hinges on a single line of holes that will be drilled around the back of the stack. There will also be a window removed on the fall side of the stack creating two columns that the URS/CWC will drill with three lines of 1  $\frac{3}{4}$ " holes each.

It is also necessary to relieve the tension on the hinge side of the stack once the explosives are detonated. This can be accomplished by two methods. Either URS/CWC will drill an additional line of 1-3/4" holes circumnavigating the opposite side of the stack, which will be loaded and detonated with the blast, or it is acceptable to chip the concrete away enough to expose the rebar on both interior and exterior mats to torch cut it. In either case, a three-foot area on both sides of the stack will be left untouched to provide lateral stability for the felling of the stack. A test blast will then be conducted on the stack to verify that a sufficient quantity of explosives is being used for the demolition. Several holes in the hinge area will be loaded with various quantities of explosives, covered with steel plates, shot, and reviewed to determine the results. Once the debris and reinforcing steel has been removed, a second test blast will be performed on the opposite hinge and the center hole, adjusting the explosive ratio as necessary. URS/CWC may utilize an excavator with hydraulic breaker to remove the remaining portions of concrete from the other stacks.

A few days prior to the blast, a local explosive supplier contractor will deliver the explosives to the site by a vehicle that meets all the local explosive haulage requirements. The explosives will be guarded onsite for the duration of the production loading. Dykon will then commence with the production loading of the stacks after the test blast. After loading is completed, URS/CWC will provide and place two layers of 10 oz geotech and two layers chain link fence or sufficient steel around the stack. This will prevent debris and flyrock from escaping the immediate area.

The surrounding structures will be protected as needed, based on their distance from the structure. All windows, doors, or equipment in the immediate vicinity should be protected from both shrapnel and dust invasion, as necessary. A pre-blast survey will be conducted by an independent firm to verify that the surrounding structures aren't affected by the blast. Seismographs will be placed at various locations surrounding the blast sight to verify that blast vibration does not exceed a maximum value. At a 500' radius from the structure the estimated peak particle velocity should be less than 0.25 inches/ sec.

The initiation system will be a non-electric system. This system uses shock tube and detonating cord to transmit the signal to the blasting caps instead of electricity. The non-electric system provides a better safety factor than the electric system of initiation. Premature detonation as a result of lightning and radio interference is negated with this system.

A security area will be established between URS/CWC and the local police department. This plan will indicate safe viewing locations for the media, general public, and personnel involved with the demolition. Prior to the blast, the area around the stack will be cordoned off as determined by all parties concerned. This area will be rechecked while the final wiring is completed and verified for continuity. When all is ready, a series of sirens will be sounded and the blast set off. Following demolition, Dykon's personnel will check the area and an all clear signal will be given before the cleanup process can begin.

Utilizing a track loader, the broken concrete debris will be removed and hauled directly to the CAMU.

#### **5.4 Stockpiling**

As steel structure and concrete demolition is progressing, material will be hauled and stockpiled in the designated Material Staging and Processing areas located within the demolition area footprints. At these locations both general demolition debris and salvageable metal materials will be sized to meet the

requirements of the final disposition location. Once general demolition debris has been segregated and sized, URS/CWC will load and transport the material directly to the CAMU. With regards to salvageable metals, URS/CWC will size the material to its requirements and stage the materials for eventual loading into railcars and/or trucks for transport to the recycling facility.

### **5.5 Debris Transportation**

URS/CWC understands the critical nature of loading and transporting of waste debris from demolition areas to the CAMU. Therefore, URS/CWC will take a proactive approach to ensure that the transportation of waste debris does not generate dust or spread waste debris outside the limits of the loading area and the final CAMU placement area. For all demolition debris, as further described below, URS/CWC will utilize water trucks and misting systems to keep debris moist during the demolition and loading process. These operations will minimize airborne dust during the loading operation and be the first step in prevention during transportation.

URS/CWC anticipates utilizing 25-35 ton rock trucks, side dump trucks, and/or 10-wheel dump trucks, or a combination thereof, to haul the material to the CAMU. All trucks will be equipped with sealed tail gates that will be closed during times of hauling to ensure that debris is not released outside the limits of the loading and dumping area. In order to further mitigate dust generation during hauling operations, URS will construct a truck moistening station at the exit of the ASARCO site over to the CAMU site. This station will consist of a scaffolding platform on which personnel will mist water on the loaded debris as a final step before it travels outside the property fence line and across the County road. The spray will add a final moisture barrier/binder to the debris for the short distance to the CAMU. Transport vehicles will be limited to a maximum 10 miles per hour while both on-site and during transport. Limiting speeds will prevent dust from become airborne during transport and will prevent the kick-up of dust due to rolling tire action.

Transport of waste on-site will follow prescribed paths, which will be determined during the course of demolition. Due to the changing nature of the site as demolition of structures progress, haul routes will require modification as site conditions dictate. However, once defined, these haul routes will be enforced to create dedicated routes that can be maintained to mitigate dust and debris migration, and prevent any potential spread of contamination. Maintenance of haul routes will be conducted through routine daily inspection to ensure that debris is not being released. Additionally, haul routes will be lightly wet with a water truck on a frequent basis throughout any given day to prevent the generation of dust due to vehicular traffic. URS/CWC will utilize the services of a street sweeper to clean the haul routes of accumulated debris and dust. This debris and dust sweepings will be dumped on-site and handled as demolition debris for eventual placement into the CAMU.

### **5.6 Plug And Abandon Underground Piping**

Underground piping exists within the footprint in which cleaning and demolition will take place. The underground piping will be plugged and sealed in place. The utility locates will be performed by the URS/CWC and compared with the utility drawings and underground utility information provided by Asarco to identify as many underground utilities as possible. The underground utility map provide by Asarco is included in Sheet Numbers 5 and 6. The abandoned underground utilities that will be flow filled is included in Sheet Number 7. The utility piping will be flushed with water and blown out with air. Some utilities/piping may contain some residual material (e.g. plant water, residual pipe sediment, sewage) from

previous activities will take necessary precautions in the handling and disposal of any such materials. All existing underground utilities (e.g. piping conduits, catch basins, manholes, Wilson irrigation ditch) will be plugged/capped and abandoned in place along their entirety utilizing flow fill or other approved material. The flow fill will be introduced using pressure not to exceed 100 psi. The grouting will continue until a steady flow of grout exits the pipe outlet. The outlet will be sealed then the inlet will be grouted under pressure using a pressure between 50 and 100 psi.

### 5.7 Capping of Demolished Areas

In order to address long-term environmental issues, Asarco proposes to place a permanent cover system over the East Helena plant site. When combined with a systematic approach of facility cleaning and structural demolition, the cover system will provide permanent site stability and closure.

On February 13, 2008, Asarco submitted to EPA the Cover System Design Report that contain Asarco's proposal for general design and construction of the cover system, which will be deployed in stages following cleaning and demolition of the East Helena Smelter. It also presents detailed design for construction of a portion of the cover system in 2008. Sheet numbers 13 and 14 illustrate the areas and details in which the 2008 temporary cap will be installed.

Asarco proposes to proceed with construction of the proposed cover system to the extent practical once the 2008 cleaning and demolition is completed, eliminating the need for placement of a less protective temporary cap in some areas. Sheet numbers 8 and 13 show the area of the site in which Asarco proposes to complete cleaning, demolition, grading, and cover system construction during calendar year 2008. While most of the areas scheduled for cleaning and demolition in 2008 will be addressed in the Cover System Design plan, a portion of the 2008 work including a section of the blast furnace flue and crusher mill building area is scheduled for a interim cap in 2008. The areas in which the interim cap will be placed is shown in Sheet number 13.

Upon completion of the cleaning and demolition operations in the identified blast furnace and crusher mill building area, URS/CWC will remove all debris and items from the slab that could possibly penetrate the subject geotextile and geomembrane. URS/CWC will utilize the existing on-site fumed slag as fill material over the identified areas. This fumed slag will be placed and rough graded to create the positive drainage required per the Construction Document Drawings. The fumed slag has been used as a grading material at the plant site in the past and possesses good physical characteristics for fill or sub-foundation uses (granular material and compacts wells). Although fumed slag contains elevated total metal concentrations, the metals are bound in a silicate-iron matrix with characteristics of low metal leachability. The potential for metal migration from the fumed slag is low. In response to EPA's July 6, 2006 comments, Asarco provided the rationale for using fumed slag for backfilling purposes, including study results derived from the RCRA Consent Decree investigations. The slag-related investigative results contained in the Current Condition Release Assessment (CC/RA, January 1999) and qualitative analyses of fumed slag (May 2001) are attached as Appendix B. In April 2005, Montana Department of Environmental Quality representatives collected fumed slag samples from the East Helena Plant to assess the potential environmental impacts from its use as an iron substitute within the cement manufacturing industry. A copy of the April 2005 fumed slag sampling event results is attached as Appendix B. A July 2006 Department Environmental Impact Statement (EIS) contains additional slag related information.

The geotextile and geomembrane will be laid, sewn, and secured as detailed. Additionally, sandbags will be placed intermittently within the center liner area to prevent the liner from being picked up by wind uplift or other forces. This will be done in sufficient quantity to ensure the liner stays in place. As an added preventative measure, URS/CWC will utilize sandbags made of UV Resistant 9-mil PE, which will provide superior UV resistance (compared to standard plastic woven sandbags) to prevent breakdown by sunlight.

URS/CWC will utilize the services of a subcontractor, Northwest Lining & Geotextile Products, Inc., for the installation of the temporary demolition caps. Complete details for the geotextile, geomembrane, and liner attachment to be utilized are contained in Attachment D of this Work Plan.

## 5.8 Equipment

A preliminary equipment list is provided below for this project. Equipment of similar size and weight by an alternate manufacturer will be substituted or added if necessary during the course of the project. Attachments used with the below listed Excavators may be interchanged as required to meet the specific requirements of the structure on which they are utilized. Therefore, each excavator may attach a bucket in place of the breaker for load out in particular procedures. Attached is a list of proposed equipment types and sizes:

- 75,000 – 175,000 LB. sized Excavators with various attachments;
- Rubber Tired Loaders with a 4 cy – 7 cy Bucket Capacity;
- Track Loaders with a 1.25 cy – 3.40 cy Bucket Capacity;
- Skid Steer Loaders;
- 2000 – 3500 Gallon Water Trucks;
- 25-40 Ton Rock Trucks;
- 10-Wheel Dump Trucks;
- Scrappers;
- Motor Graders; and
- Misc. Equipment (Man Lifts, Air Compressors, Torches, etc.).

## 5.9 Storm Water Pollution Prevention Plan

URS understands and appreciates the importance of the SWPPP due to the present concerns and conditions of the ASARCO facility. URS will utilize Best Management Practices (BMPs) for various construction activities. From the existing SWPPP, applicable information, such as management practices for the hazardous material storage areas, will be incorporated into URS' Best Management Practices. Other material handling practices related specifically to the decontamination and demolition activities will be addressed. Management practices for cross-contamination control will be addressed, such as avoiding spills from construction vehicles during hauling, loading, servicing, and fueling and controlling contaminated soil erosion. Changes to the storm drainage system due to demolition will be addressed as the structures are demolished and the site conditions change.

Standard erosion control measures will also be utilized, including controlling dust, providing straw bales around storm drain inlets, placing sand-bags at critical perimeter locations, and avoiding off-site tracking of debris from vehicles. Provisions to avoid ponding and maintain excavations free of storm water runoff will

be addressed. Typically, this will involve filling these locations prior to storms. Measures for erosion control will be added as the project progresses.

Inspection of the erosion control measures will be made prior to, during, and after storms to evaluate the adequacy of these measures and to manage corrections as necessary. Documentation of the inspection and correction activities will be maintained, as required. Generally, the inspection and documentation will be done by the Project Manager / Engineer. Copies of the documentation will be forwarded to ASARCO for review and records.

## **6.0 DUST CONTROL PLAN**

---

The general requirements of this plan are to provide adequate resources to control dust and to detail the means and methods that will be utilized to implement dust control measures during the cleaning and demolition in order to support scheduled activities/operations within the ASARCO facility. URS/CWC's dust control measures are designed to control the emission of visible fugitive nuisance dust. These controls will be accomplished through the use of administrative, engineering, and physical controls that will include, but not be limited to the following:

- Wetting surfaces with water;
- Application of dust suppressants or encapsulates, where applicable;
- Minimizing soil, road, and surface disturbances;
- Minimize dusting exposure periods and wind erosion before dust-abatement measures are applied;
- Curtailing of work activities during high wind conditions (over 15 MPH average hourly rate);
- Controlling vehicle/equipment speeds (10 MPH maximum);
- Restricting traffic to designated roads/corridors; and
- Equipment Selection.

URS/CWC considers the mitigation of airborne dust generation to be a priority. Throughout the project, URS/CWC will take all necessary steps to effectively control dust in the working area during demolition operations. As previously mentioned, URS/CWC will remove at ground level and at all accessible areas all gross debris accumulation that could be a source of airborne dust. Furthermore, URS/CWC will institute a program of pre-wetting and moistening building interiors and horizontal surfaces where dust has accumulated. This pre-wetting of the structure interiors will limit the ability of remaining dust to become airborne during the demolition process. As the structures are demolished, the dust will be allowed to fall to the ground where it can be gathered, containerized appropriately, and properly managed.

### **6.1 Application With Water During Demolition**

The use of water will be the main source for dust control. URS/CWC will keep all work areas (including roads, access points) within the facility, wet during work activities. This will be accomplished by using 2,000-gallon water trucks. Each water truck will be equipped with spray-bars for wetting haul and access roads; water cannons and necessary hoses, valves, and fittings will be used to provide spray water for dust control where needed in remote areas where a water truck can not be utilized.



2 Furthermore, during the life of the project water truck(s) will be available during the actual demolition of the above grade steel and concrete structures. Localized fine water spray pointed to the source of demolition (and therefore dust source) reduces dust particles to become airborne. Additionally, URS will utilize a Dust Boss™ water misting system. The Dust Boss™ is a fully automatic, oscillating ducted fan with a high pressure misting system that creates a high performance dust barrier. Boss™ uses a high pressure misting system to create an ultrafine mist that attracts dust and drives it to the ground. During structure demolition, this equipment will be pre-positioned in an area that will ensure the generated dust barrier is effective. To minimize water run-off, both the water truck and Dust Boss™ water supply will be used only if necessary.

## 6.2 Dust Control During Stack Demolition

With regards to the felling of the stacks, all stack interior cleaning has been performed to remove all loose dust and debris that could be a potential dust source. Dust generated from the felling process will come from two primary sources: (1) from existing soil and dust particles at grade; and (2) from the fracturing of stack concrete as it impacts the ground. Dust will not be generated from the interior sections of the stacks since cleaning of these structures has previously taken place. The cleaning of the interior sections of the stacks is discussed in Asarco's 2007 quarterly and annual completion reports. To minimize the amount of dust generated from at grade soil, URS/CWC will utilize water trucks to wet the ground of anticipated stack landing zone. This will be performed on the day of the blast, based on the landing zone analysis of the blasting subcontractor. With regards to the fracturing of stack concrete as it impacts the ground, URS/CWC will utilize several Dust Boss™ water misting systems. These systems will be positioned adjacent to the landing zone of the stack to be felled. They will be turned on prior to the actual felling of the stack to create curtain of water mist particles around the impact area, thereby, minimizing generation of airborne dust. At all times during the stack felling process, the minimization of dust will be given top priority.

## 6.3 Dust Control During Loading and Debris Transportation

During loading, unloading, and material transfer operations, URS/CWC will minimize material drop heights to reduce emission of fugitive dust. During loading of demolition debris, additional spray water will be utilized to control fugitive dust emissions from this operation. After demolition debris is loaded into the truck beds, URS/CWC will then moisten the debris payload down prior to the vehicle leaving the loading areas.

A As described above, during debris transportation, URS/CWC will construct a truck moistening station at the exit of the ASARCO site over to the CAMU site. This station will consist of a scaffolding platform on which personnel will mist water on the loaded debris as a final step before it travels outside the property fence line and across the County road. The spray will add a final moisture barrier/binder to the debris for the short distance to the CAMU. Transport vehicles will be limited to a maximum 10 miles per hour while both on-site and during transport. Limiting speeds will prevent dust from become airborne during transport and will prevent the kick-up of dust due to rolling tire action.

## 6.4 Dust Suppressant

The primary dust control measure to be used will be water. However, the application of an accepted dust suppressant dispersed from the water trucks or special equipment as a dust suppressant may be required

during periods of time that the application of water alone is inadequate for dust control. Dust suppressant product information and MSDSs will be submitted for approval prior to usage and/or application.

### **6.5 Area Control**

URS/CWC will use specific loading areas for each decontamination/demolition removal location to minimize disturbances and control material transfer operations. During the demolition of each structure, URS/CWC will designate a staging and loading area directly adjacent to each structure. Often this area will be within the footprint of the structure being demolished. This staging and loading area, specific to each structure, will be kept constant and will be maintained to control the migration of dust and debris from moving material unnecessarily.

### **6.6 Water Source**

URS/CWC will utilize the existing ASARCO provided fill station, adjacent to Upper Lake, as the source of non-potable water to be utilized for dust suppression operations.

### **6.7 Field Quality Control**

URS/CWC Project Staff (i.e., Project Superintendent, Foremen, H&SP) will inspect work areas daily to assess the need for implementation (or additional implementation) of dust control measures.

### **6.8 Overall Dust Control Application**

URS/CWC will control fugitive dust emissions by using the following overall methods:

- Provide dust suppression (water) before, during, and after demolition of a structure, provided it is safe to do so.
- In cases where structures are to be dropped (stack demolition, elevated structures), URS/CWC will moisten the targeted drop area prior to the demolition of the structure.
- Provide dust control during material sizing and loading operations.
- Control material drop heights during loading, unloading and material transfer operations.
- Minimize and control material handling operations.
- On-site vehicular traffic control and haul road maintenance
- If necessary, URS/CWC will apply other approved methods for control of dust during specific procedures.

## **7.0 WASTE MANAGEMENT PLAN**

---

Prior to and during completion of the 2008 Cleaning & Demolition and CAMU Project, URS/CWC will utilize this Waste Management Plan for the coordination and off-site disposal of the various waste streams to be generated during the decontamination and demolition activities. This plan has been developed to provide guidance, direction and procedures for managing the handling and disposal of hazardous waste solid and liquid waste, as well as non-hazardous wastes, generated as a result of the site cleaning, asbestos abatement, and demolition of the facilities at the East Helena facility. This plan will describe the

responsibilities and procedures to be implemented by URS/CWC for the control and disposition of waste at the site.

### 7.1 Waste Scenarios

During the cleaning and demolition of the 2008 areas, it is expected that a variety of wastes will be generated and that the anticipated waste materials include, but are not limited to, the following categories:

- Asbestos Containing Materials;
- Heavy Metal Impacted Solids; and
- Demolition Debris.

The compounds that are included in these categories may occur separately or in combination.

### 7.2 Description of Solid Waste Disposal Options

For the purposes of disposal disposition, waste generated during the site activities will be subject to the following disposal options:

- Clean steel, tin, and non-ferrous materials for off-site recycling;
- All other solid waste, whether non-hazardous or hazardous for disposal in the CAMU;
- Friable and Non-Friable Asbestos Containing Waste for disposal in the CAMU;
- Personal Protective Equipment for off-site disposal by ASARCO; and
- Liquid waste for recycling or off-site disposal by ASARCO.

### 7.3 Management of Non-CAMU Waste Streams

During the cleaning and demolition activities, URS/CWC shall containerize and store all hazardous and universal wastes generated as part of the work. URS/CWC shall use containers made of or lined with materials, which will not react with, and are otherwise compatible with, the hazardous waste to be transferred or stored, so that the ability of the container to contain the waste is not impaired.

If a container holding hazardous waste is not in good condition (e.g. severe rusting, apparent structural defects), or if it begins to leak, URS/CWC shall immediately transfer the hazardous waste from the container to a container that is in good condition. URS/CWC shall inspect areas used for hazardous waste storage or transfer at least weekly for leaking containers or aboveground tanks, for deterioration of containers, tanks and the containment systems caused by corrosion. At the current time, URS/CWC anticipates utilizing the Direct Smelt Building or Shop Storage Building for the storage of containerized hazardous and Universal wastes.

Incompatible wastes and materials shall not be placed in the same container or aboveground tank. URS/CWC will handle and manage incompatible waste in such a manner that prevents violent reactions, generation of uncontrolled fumes, mists, gases and dusts, production of flammable fumes or gases and damage to the integrity of the waste container.

Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. A container holding a hazardous waste that is incompatible with any waste or other materials transferred or stored nearby in other containers, piles, open tanks, or surface impoundments shall be separated from the other material.

URS/CWC shall store all hazardous waste in containers suitable for transport in accordance with 49 CFR Parts 170 through 179 or the requirements of the transporter, whichever is more stringent. No waste shall be transferred or stored in a manner which may rupture the container or cause it to leak.

#### 7.4 Labeling of Waste

Proper marking and labeling shall be applied by URS/CWC for all hazardous and non-hazardous waste at the time the waste is placed in the container. Waste that is stored in bulk shall be posted with a sign that bears an appropriate waste label as well as the information required for waste area signs as applicable.

*Date*  
*Time Frame*  
*for*  
*Charx*  
*specify*  
*A-CO generator?*

During decontamination activities or as discovered, URS/CWC may encounter waste streams that are placed into containers that are either previously unidentified or the exact waste characterization (i.e., Haz or Non-Haz) is unknown. For those instances, URS/CWC will label the container with a "Non-Classified Waste Material; Laboratory Analysis in Progress" label. This label will identify the material as an uncharacterized waste stream. URS/CWC will indicate on the label where the containerized material came from and if a reasonable amount of information is available, what the suspected waste stream is.

#### 7.5 Management of CAMU Approved Waste

Once the CAMU is ready to accept material, URS/CWC will begin the loading and transportation of stockpiled waste from the various storage areas into the CAMU. General demolition waste will be loaded with track or rubber-tired loaders and transported via rock trucks in the same manner as that for general demolition operations. Friable asbestos containing waste, that is wrapped and contained, will be loaded, transported, and placed in the CAMU cell in such a manner that the integrity of the wrapping is not breached. At no time will friable material be exposed to the environment. Non-friable asbestos waste that is placed in the CAMU will be loaded as described above for general demolition debris. Due to the impacted nature of the CAMU waste, including both asbestos and lead containing waste, URS/CWC will strictly enforce the dust control measures as described above.

#### 7.6 Waste Management Quality Control

Waste management quality control will be accomplished through the use of administrative, engineering, and physical controls that will include, but not be limited to the following:

- Routine inspections of waste storage areas;
- Curtailing of work activities during high wind conditions (over 15 MPH s average hourly rate);
- Curtailing of waste handling and transport during rain events with enough volume to create run-off;
- Pre-identification and handling of waste requiring special management; and
- Decontamination of equipment used to handle waste.

### **Inspections**

URS/CWC shall implement inspection procedures to address potential deficiencies related to the waste storage areas. URS/CWC shall conduct, at least weekly, inspections of the areas designated for container storage, or transfer. URS/CWC shall inspect the area for evidence of deterioration of containers and secondary containment areas. Additionally, inspection of container labeling and accumulation dates will be completed to ensure that all containers are properly and legibly labeled and that no containers will or are close to exceeding the on-site storage date. URS/CWC will inspect containers and storage areas to ensure that they are not, have not, and will not be susceptible to any weather event that could cause release of a hazardous waste stream onto the site or into the storm water system.

### **Work Stoppage**

URS/CWC shall halt work when weather conditions are such that the spread of contaminated dust and debris is likely. These conditions typically exist when there is excessive wind and/or rain. Therefore, if wind with 15 MPH average hourly rate or more evolve, URS/CWC will halt the handling of waste to prevent dust and debris from becoming airborne due to the waste management process. Furthermore, if a rain event begins, URS/CWC personnel will evaluate the site conditions. If the rain is such that no run-off is occurring, work activities will proceed uninhibited. In the event that the rain is of such volume that run-off is beginning to occur and the work activities in progress (i.e., dust cleaning, demolition of a contaminated area) could create a contaminated run-off, work will cease until such time that a run-off potential is not present. URS/CWC will evaluate these conditions with ASARCO representatives.

### **Special Waste Handling and Segregation**

Prior to demolition activities, URS/CWC will ensure that all waste requiring special handling have been removed from the structures to be demolished. Special wastes shall consist of asbestos containing wastes, universal waste, and liquid wastes. Universal and liquid wastes will have removed the structures, handled, and stored as Non-CAMU wastes defined above. Asbestos containing waste that will be placed in the CAMU will be segregated as it is abated.

### **Decontamination of Equipment**

URS/CWC will provide for the decontamination of equipment used in the handling and/or transport of demolition debris prior to the equipment leaving the site, or moving from a demolition zone to an area considered clean. URS/CWC will establish a decontamination pad, in an area agreed with and approved by ASARCO. This decontamination pad may change location dependent upon demolition activities and the evolution of the project site. This decontamination pad will be on concrete slab suitable for placement of heavy equipment.

Decontamination will consist of one or a combination of the following: brushing, vacuuming, or washing methods. The goal of the decontamination is to remove heavy metal laden bearing dust and debris from the areas of the equipment that came into contact with this waste. Upon completion of the decon activity, any removed dust and debris will be hauled into the CAMU.

Equipment that has been decontaminated will be inspected upon completion to ensure the adequacy of the process and to document the process to ensure quality control.

**ATTACHMENT A**

**CONSTRUCTION DOCUMENT DRAWINGS**

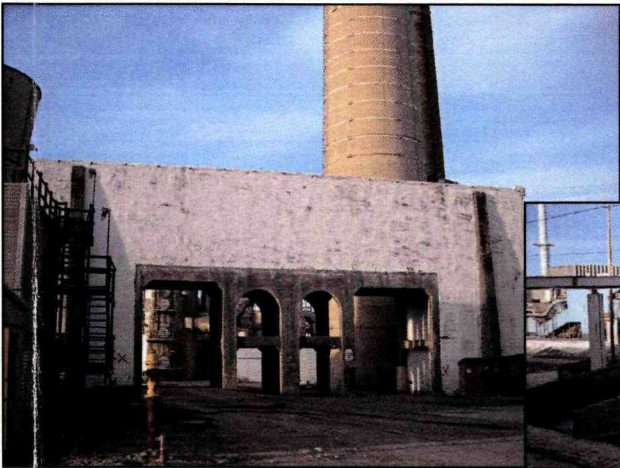




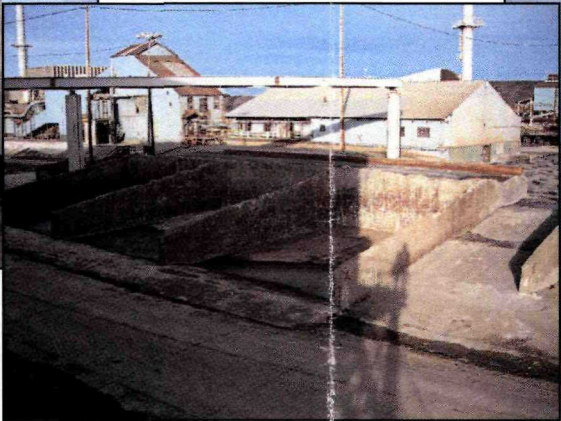
# ASARCO LLC EAST HELENA PLANT

## 2008 CLEANING & DEMOLITION PROJECT

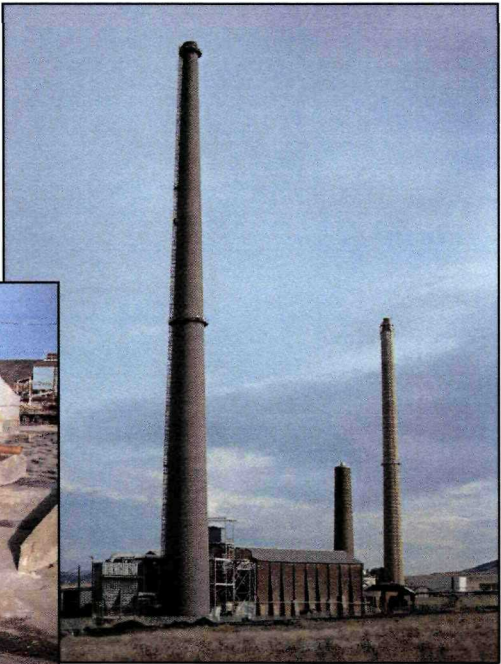
MARCH 2008



BLAST FLUE UNDERPASS



CRUSHING/SAMPLE MILL AREA



THREE STACKS AND BAGHOUSE

### LEGEND

- 2008 DEMOLITION
- 2007 AND PRIOR DEMOLITION

- DETAIL NUMBER
- PAGE ON WHICH DETAIL IS SHOWN

### ABBREVIATIONS

- |             |                       |
|-------------|-----------------------|
| B.F.        | BLAST FURNACE         |
| BLDG.       | BUILDING              |
| CONC.       | CONCRETE              |
| CONV.       | CONVEYOR              |
| CY          | CUBIC YARDS           |
| Ø           | DIAMETER              |
| EL., ELEV.  | ELEVATION             |
| EX., EXIST. | EXISTING              |
| FCE.        | FURNACE               |
| I.E.        | INVERT ELEVATION      |
| LF          | LINEAL FOOT           |
| LIQ.        | LIQUID                |
| M.C.C.      | MOTOR CONTROL CENTER  |
| MISC.       | MISCELLANEOUS         |
| MPC         | NORTHWEST ENERGY      |
| MW          | MONITORING WELL       |
| N.G.        | NATURAL GAS           |
| OC          | ON CENTER             |
| PB          | LEAD BEARING MATERIAL |
| R, RAD.     | RADIUS                |
| SCH. SCHED. | SCHEDULE              |
| SY          | SQUARE YARDS          |
| TYP.        | TYPICAL               |
| V           | VERTICAL              |
| W, WTR.     | WATER                 |
| W/          | WITH                  |

### DRAWING LIST

DWG. NO.	TITLE
GENERAL SHEETS	
1	DRAWING INDEX & SITE VICINITY MAP
2	SITE PLOT PLAN
3	WASTE LOCATION MAP
4	ASBESTOS SURVEY LOCATION MAP
5	ACTIVE UTILITIES
6	UNDERGROUND UTILITIES ABANDONED
7	UNDERGROUND UTILITIES TO BE FLOW FILLED
2008 DEMOLITION PLAN SHEETS	
8	2008 DEMOLITION - PLAN
9	2008 DEMOLITION - STACK AND BAGHOUSE AREA
10	2008 DEMOLITION - MONIER FLUE AND ACID PLANT AREA
11	2008 DEMOLITION - CRUSHING AND SAMPLE MILL AREA
12	2008 DEMOLITION - BLAST FURNANCE FLUE AREA
TEMPORARY CAP PLAN SHEETS	
13	2008 COVER SYSTEM AND INTERIM CAP - PLAN
14	DETAILS

NO	BY	DATE	DESCRIPTION

NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Project No.: 7054  
DRAWN BY: SDP 1/17/07  
CHECKED BY: MWR 1/23/07  
APPROVED BY: MJO 1/24/07  
SCALE: AS NOTED

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3020 Broadway Avenue  
(406) 443-4393

ASARCO LLC - EAST HELENA PLANT  
2008 CLEANING & DEMOLITION PROJECT  
DRAWING INDEX &  
SITE VICINITY MAP

DRAWING FILE NUMBER  
705403H003.dwg  
AUTOCAD 2004 DRAWING (DWG)  
SHEET NUMBER  
1  
REV





REVISIONS

NO	BY	DATE	DESCRIPTION

REVISIONS

NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Project No.: 7054  
DRAWN BY JSD 12/12/06  
CHECKED BY MWR 1/19/06  
APPROVED BY MJG 1/19/06  
SCALE: 1"=100'

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
  
Helena, Montana 59601  
3020 Buchanan Avenue  
(406) 448-4180

**ASARCO LLC - EAST HELENA PLANT**  
**2008 CLEANING & DEMOLITION PROJECT**  
  
**SITE PLOT PLAN**

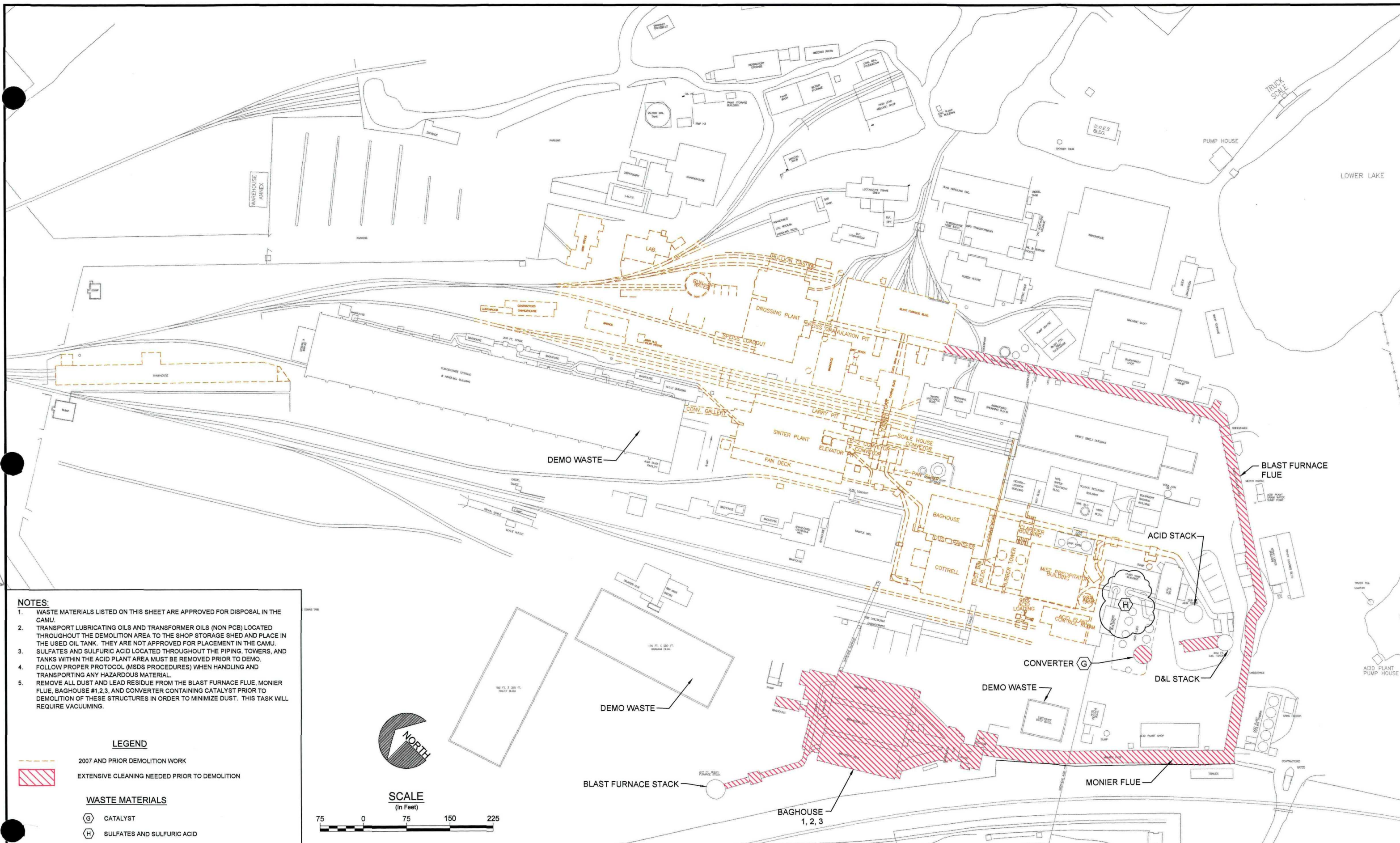
DRAWING FILE NUMBER  
705403H004.dwg  
AUTOCAD 2004 DRAWING (DWG)

SHEET NUMBER  
2

REV  
A

UPDATE TIME: 2:06PM  
JSD\VEL\022708\Land Projects\705403\dwg\705403H004.dwg





- NOTES:**
1. WASTE MATERIALS LISTED ON THIS SHEET ARE APPROVED FOR DISPOSAL IN THE CAMU.
  2. TRANSPORT LUBRICATING OILS AND TRANSFORMER OILS (NON PCB) LOCATED THROUGHOUT THE DEMOLITION AREA TO THE SHOP STORAGE SHED AND PLACE IN THE USED OIL TANK. THEY ARE NOT APPROVED FOR PLACEMENT IN THE CAMU.
  3. SULFATES AND SULFURIC ACID LOCATED THROUGHOUT THE PIPING, TOWERS, AND TANKS WITHIN THE ACID PLANT AREA MUST BE REMOVED PRIOR TO DEMO.
  4. FOLLOW PROPER PROTOCOL (MSDS PROCEDURES) WHEN HANDLING AND TRANSPORTING ANY HAZARDOUS MATERIAL.
  5. REMOVE ALL DUST AND LEAD RESIDUE FROM THE BLAST FURNACE FLUE, MONIER FLUE, BAGHOUSE #1,2,3, AND CONVERTER CONTAINING CATALYST PRIOR TO DEMOLITION OF THESE STRUCTURES IN ORDER TO MINIMIZE DUST. THIS TASK WILL REQUIRE VACUUMING.

**LEGEND**

2007 AND PRIOR DEMOLITION WORK

EXTENSIVE CLEANING NEEDED PRIOR TO DEMOLITION

**WASTE MATERIALS**

G CATALYST

H SULFATES AND SULFURIC ACID

NO				BY	DATE	DESCRIPTION	NO				BY	DATE	DESCRIPTION
REVISIONS							REVISIONS						

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Project No.: 7054

DRAWN BY: JSD 1/19/07

CHECKED BY: MWR 1/24/07

APPROVED BY: MUO 1/24/07

SCALE: 1"=75'

**Hydrometrics, Inc.**

Consulting Scientists and Engineers

Helena, Montana 59801

3020 Broadway Avenue

(408) 448-4790

**ASARCO LLC - EAST HELENA PLANT**

**2008 CLEANING & DEMOLITION PROJECT**

**WASTE LOCATION MAP**

DRAWING FILE NUMBER

705403H005.dwg

AUTOCAD 2004 DRAWING (DWG)

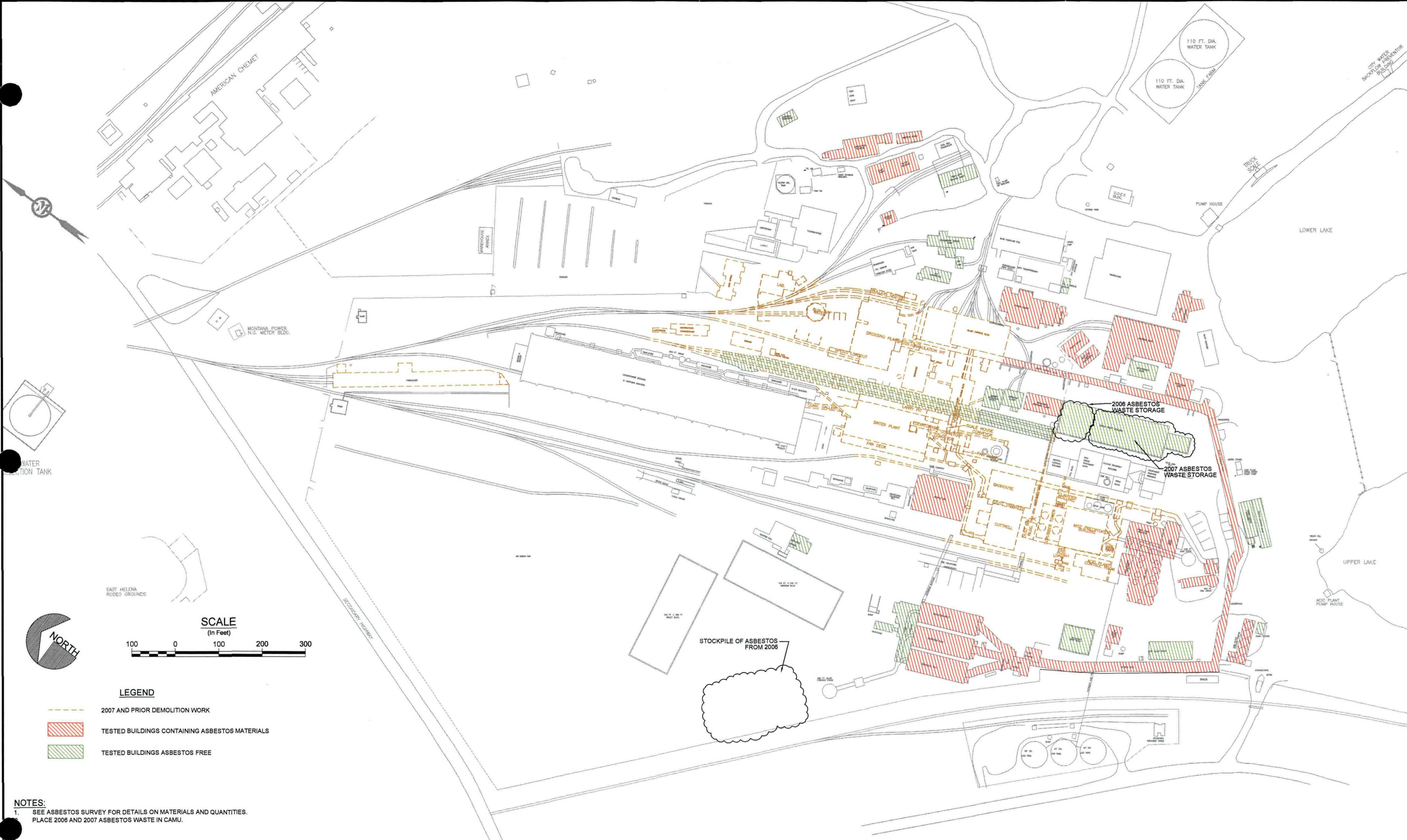
SHEET NUMBER

3

REV

△





**NOTES:**  
1. SEE ASBESTOS SURVEY FOR DETAILS ON MATERIALS AND QUANTITIES.  
PLACE 2006 AND 2007 ASBESTOS WASTE IN CAMU.

REVISIONS	NO	BY	DATE	DESCRIPTION	REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING 0 1 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY		Project No.: 7054	Drawn By: JSD 1/17/07
		Checked By: MWR 1/19/07	Approved By: MJO 1/19/07
		SCALE: 1"=100'	

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3020 Bozeman Avenue  
(408) 443-4350

ASARCO LLC - EAST HELENA PLANT  
2008 CLEANING & DEMOLITION PROJECT  
ASBESTOS SURVEY  
LOCATION MAP

DRAWING FILE NUMBER	
705403H006.dwg	
AUTOCAD 2004 DRAWING (DWG)	
SHEET NUMBER	REV
4	△



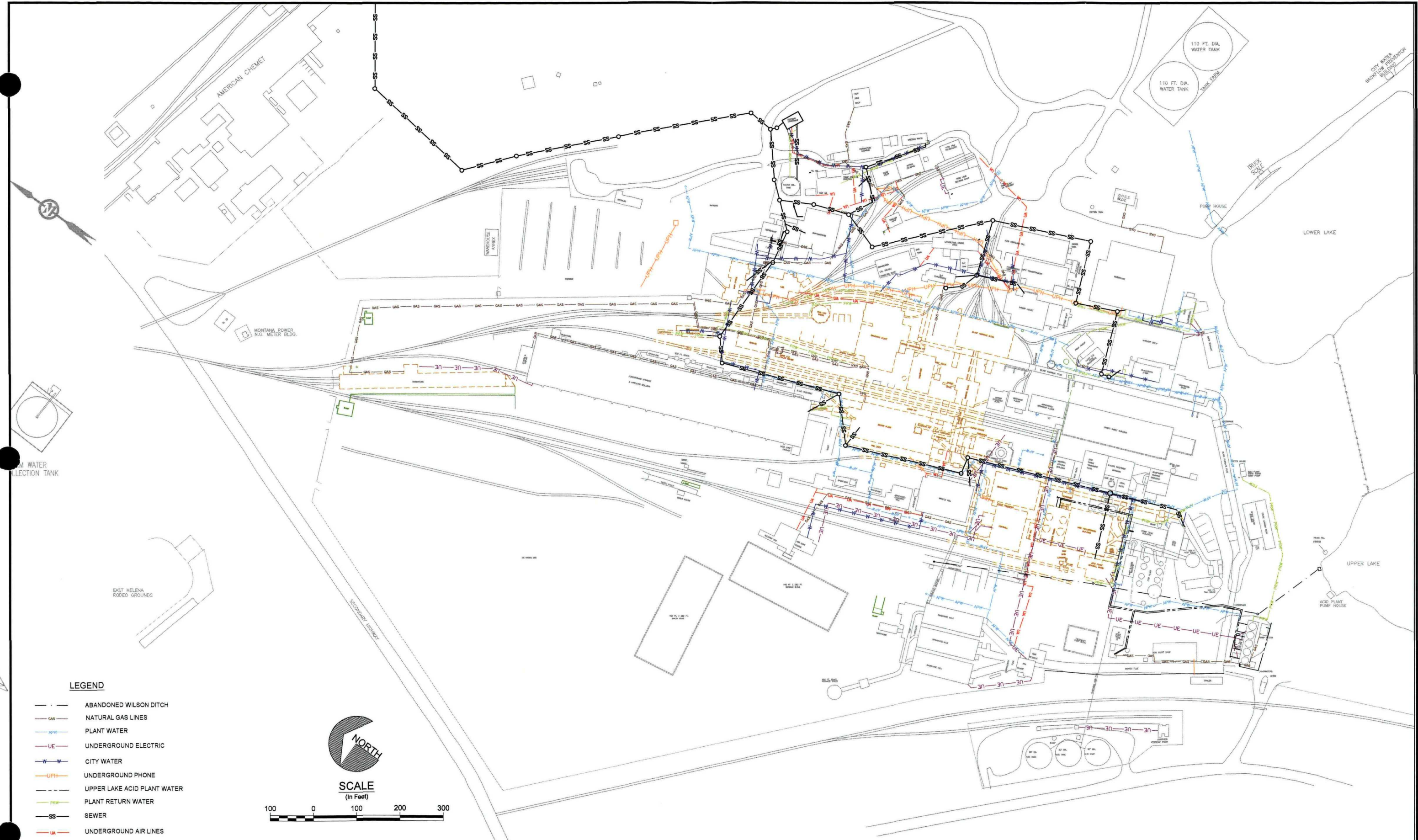


- LEGEND**
- GAS — UNDERGROUND NATURAL GAS LINES
  - E — OVERHEAD ELECTRICAL
  - UE — UNDERGROUND ELECTRICAL
  - W — UNDERGROUND CITY WATER
  - UPH — UNDERGROUND PHONE
  - PW — UNDERGROUND PLANT WATER (PRESSURIZED)
  - PRW — UNDERGROUND PLANT RETURN WATER
  - PRW — HDS RETURN WATER (PRESSURIZED)
  - SW — STORM WATER COLLECTION SYSTEM
  - PRW — OVERHEAD PLANT RETURN WATER
  - GAS — TEMPORARY ABOVE GROUND GAS
  - AGPW — ABOVE GROUND PLANT WATER

- NOTES:**
- UTILITIES SHOWN ON THIS SHEET ARE CURRENTLY ACTIVE AND WILL REMAIN ACTIVE DURING AND AFTER THE 2008 CLEANING & DEMOLITION PROJECT.
  - IN ADDITION ACTIVE OVERHEAD UTILITIES ATTACHED TO POWER POLES ARE NOT SHOWN. THESE OVERHEAD LINES WILL REMAIN ACTIVE DURING AND AFTER THE 2008 CLEANING & DEMOLITION PROJECT.

REVISIONS	NO	BY	DATE	DESCRIPTION	REVISIONS	NO	BY	DATE	SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING 0 1 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	Project No.: 7054 DRAWN BY: GWL 1/19/07 CHECKED BY: MWR 1/19/07 APPROVED BY: MUJ 1/19/07 SCALE: 1"=100'	<b>Hydrometrics, Inc.</b> Consulting Scientists and Engineers Helena, Montana 59601 3020 Broadway Avenue (406) 443-4190	<b>ASARCO LLC - EAST HELENA PLANT</b> <b>2008 CLEANING &amp; DEMOLITION PROJECT</b>		<b>ACTIVE UTILITIES</b>		DRAWING FILE NUMBER 705403H007.dwg AUTOCAD 2004 DRAWING (DWG) SHEET NUMBER 5		REV



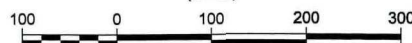


LEGEND

- ABANDONED WILSON DITCH
- NATURAL GAS LINES
- PLANT WATER
- UNDERGROUND ELECTRIC
- CITY WATER
- UNDERGROUND PHONE
- UPPER LAKE ACID PLANT WATER
- PLANT RETURN WATER
- SEWER
- UNDERGROUND AIR LINES



SCALE  
(In Feet)



REVISIONS	NO	BY	DATE	DESCRIPTION	REVISIONS	NO	BY	DATE	DESCRIPTION

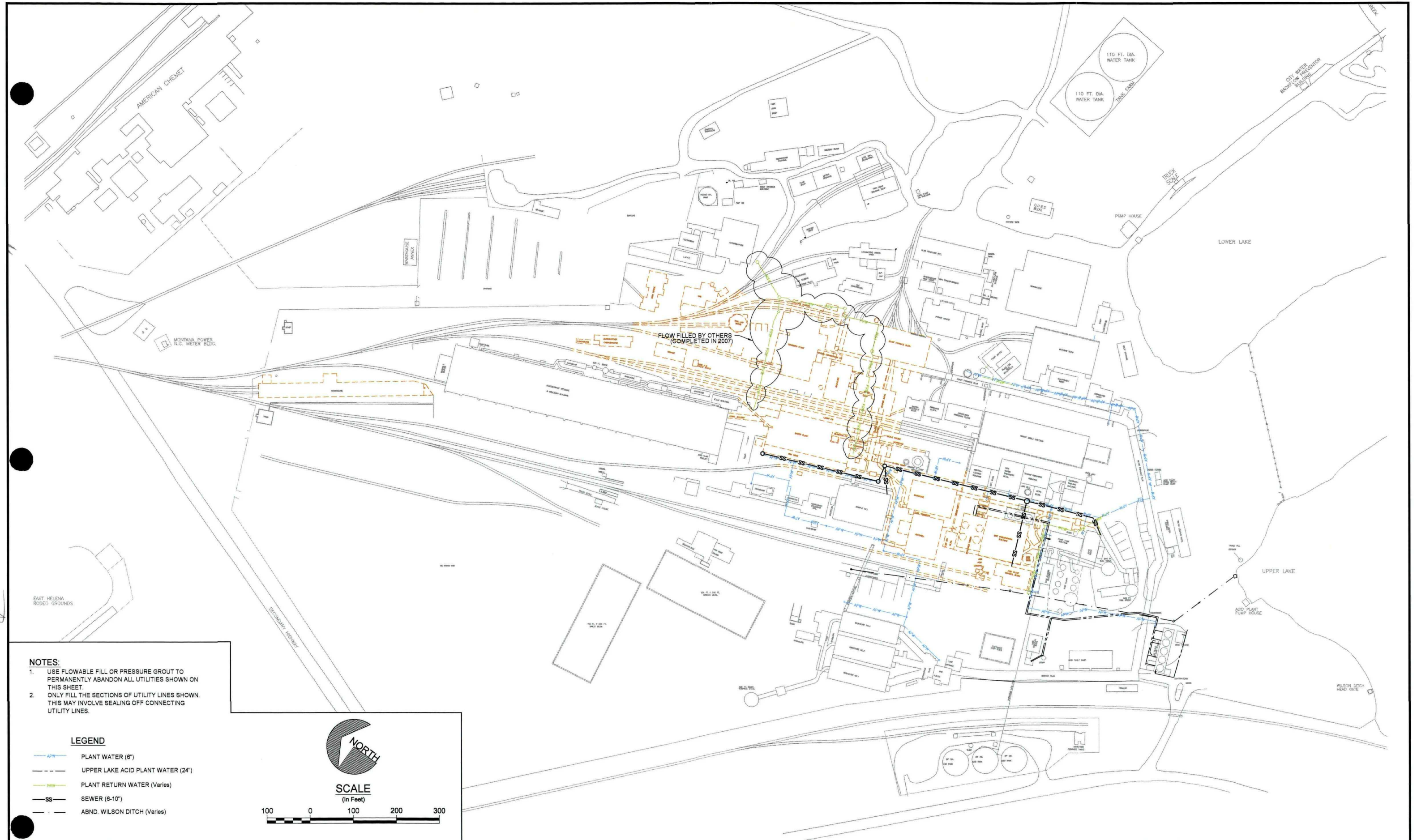
SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING 0 1 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY				Project No.: 7054 DRAWN BY: GWL 1/19/07 CHECKED BY: MWR 1/19/07 APPROVED BY: MJO 1/24/07 SCALE: 1"=100'			
---	--	--	--	---	--	--	--

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3085 Broadway Avenue  
(406) 443-4100

ASARCO LLC - EAST HELENA PLANT  
2008 CLEANING & DEMOLITION PROJECT  
UNDERGROUND UTILITIES  
ABANDONED

DRAWING FILE NUMBER 705403H008.dwg	
AUTOCAD 2004 DRAWING (DWG)	
SHEET NUMBER 6	REV △





**NOTES:**

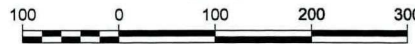
1. USE FLOWABLE FILL OR PRESSURE GROUT TO PERMANENTLY ABANDON ALL UTILITIES SHOWN ON THIS SHEET.
2. ONLY FILL THE SECTIONS OF UTILITY LINES SHOWN. THIS MAY INVOLVE SEALING OFF CONNECTING UTILITY LINES.

**LEGEND**

- PLANT WATER (6")
- UPPER LAKE ACID PLANT WATER (24")
- PLANT RETURN WATER (Varies)
- SS — SEWER (6-10")
- - - ABND. WILSON DITCH (Varies)



**SCALE**  
(In Feet)



REVISIONS	NO	BY	DATE	DESCRIPTION

REVISIONS	NO	BY	DATE	

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

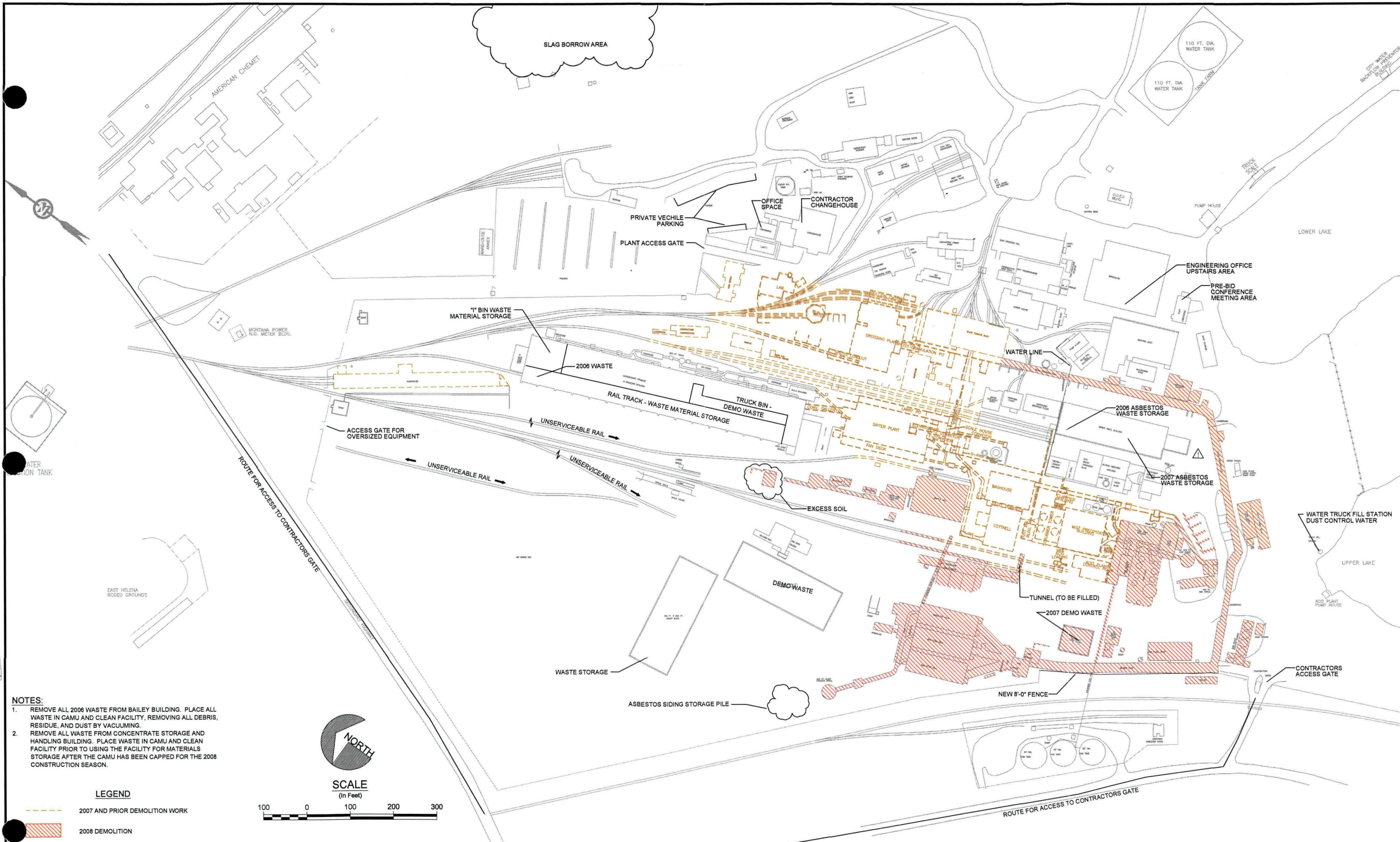
Project No.:	7054
DRAWN BY	GWL 1/19/07
CHECKED BY	MWR 1/19/07
APPROVED BY	MJO 1/24/07
SCALE:	1"=100'

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3025 Bozeman Avenue  
(406) 448-4180

**ASARCO LLC - EAST HELENA PLANT**  
**2008 CLEANING & DEMOLITION PROJECT**  
**UNDERGROUND UTILITIES**  
**TO BE FLOW FILLED**

DRAWING FILE NUMBER	705403H009.dwg
AUTOCAD 2004 DRAWING (DWG)	
SHEET NUMBER	7
REV	



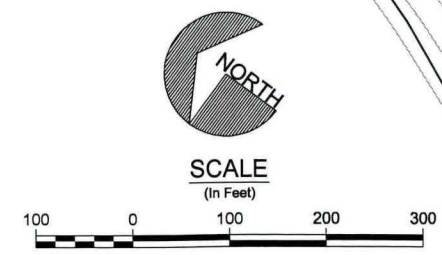



- NOTES:**
1. REMOVE ALL 2006 WASTE FROM BAILEY BUILDING. PLACE ALL WASTE IN CAMU AND CLEAN FACILITY, REMOVING ALL DEBRIS, RESIDUE, AND DUST BY VACUUMING.
  2. REMOVE ALL WASTE FROM CONCENTRATE STORAGE AND HANDLING BUILDING. PLACE WASTE IN CAMU AND CLEAN FACILITY PRIOR TO USING THE FACILITY FOR MATERIALS STORAGE AFTER THE CAMU HAS BEEN CAPPED FOR THE 2008 CONSTRUCTION SEASON.

**LEGEND**

--- 2007 AND PRIOR DEMOLITION WORK

--- 2008 DEMOLITION

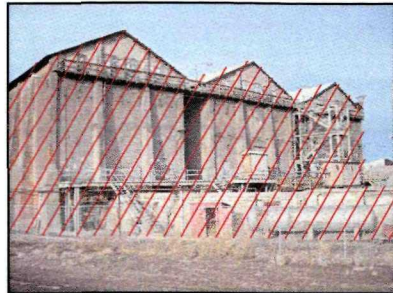


REVISIONS	NO	BY	DATE	DESCRIPTION	REVISIONS	NO	BY	DATE	SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING 0 1 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	Project No.: 7054 DRAWN BY JSD 1/19/06 CHECKED BY MWR 1/19/06 APPROVED BY MJO 1/24/07 SCALE: 1"=100'	<b>Hydrometrics, Inc.</b> Consulting Scientists and Engineers  Helena, Montana 59601 3025 Broadway Avenue (406) 443-4193		ASARCO LLC - EAST HELENA PLANT 2008 CLEANING & DEMOLITION PROJECT		DRAWING FILE NUMBER	
	705403H018.dwg															
	AUTOCAD 2004 DRAWING (DWG)															
	SHEET NUMBER															
	8															

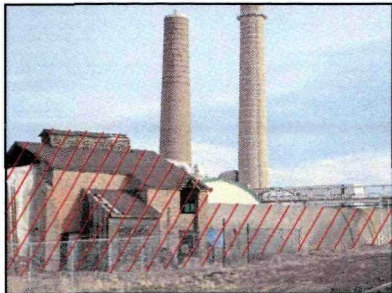




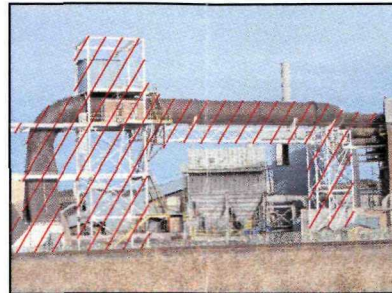
P4-18 ORE UNLOADING RAMP & OVERHEAD SUPPORTS



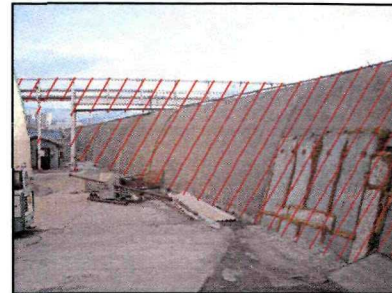
P4-35 BAG HOUSE BUILDINGS & DISTRIBUTION FLUE



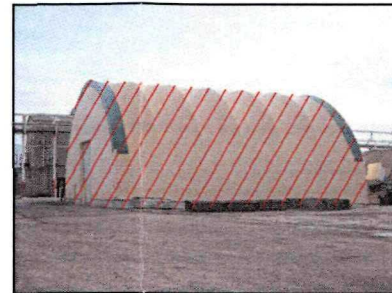
P4-34 FAN HOUSE AND MONIER FLUE



P4-33 FLUE DUCTING AND SUPPORTS



P4-32 MONIER FLUE, OVERHEAD ACID PIPES, & SUPPORTS



P4-31 DUST BUILDING (RINGLING BUILDING)



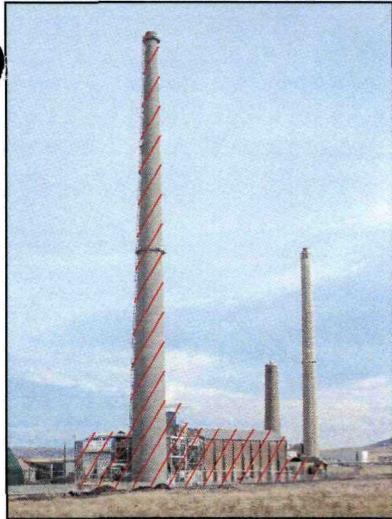
P4-30 FANHOUSE, LIME STORAGE, & FLUE



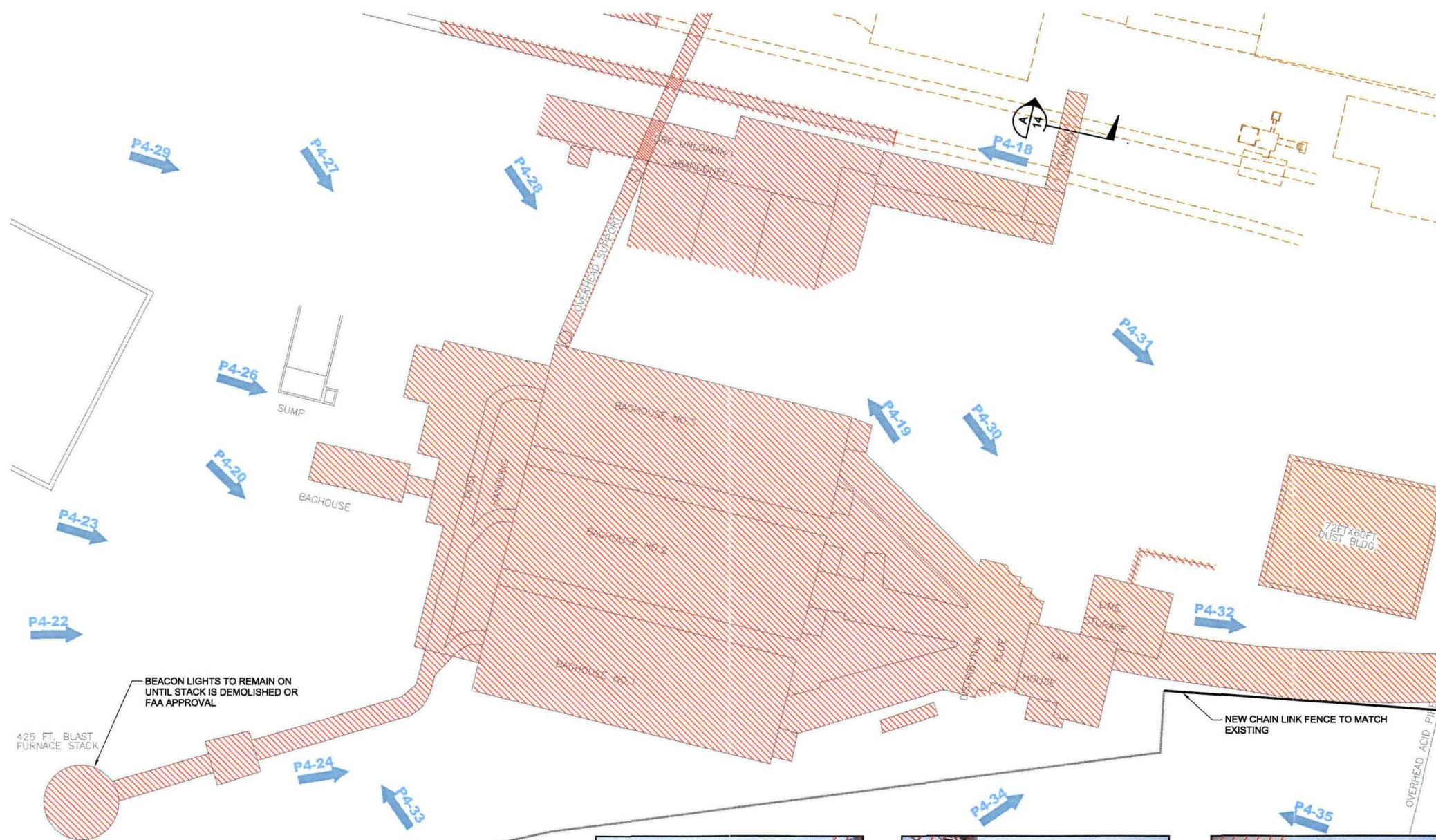
P4-19 ORE UNLOADING RAMP & MATERIAL BINS



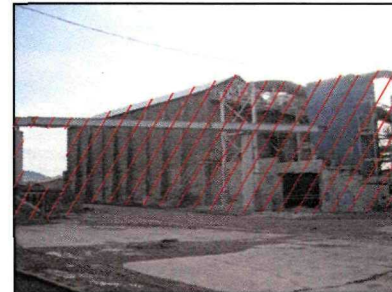
P4-20 ORE BAG HOUSE BUILDINGS & FLUE DUCTING



P4-21 420' STACK & BAGHOUSE



P4-29 RAILROAD TRACKS, ORE UNLOADING RAMP, OVERHEAD SUPPORTS, & BAGHOUSE



P4-28 BAGHOUSE BUILDING & DUCTING



P4-27 BAGHOUSE BUILDING & DUCTING



P4-26 BAGHOUSE BUILDING & DUCTING

P4-21 420' STACK & BAGHOUSE

P4-22 BAGHOUSE BUILDINGS

P4-23 BAGHOUSE BUILDINGS & FLUE DUCTING

P4-24 BAGHOUSE BUILDING & FLUE DUCTING SUPPORT

P4-25 420' STACK, BAGHOUSE BUILDING, FLUE DUCTING, & FLUE DUCTING SUPPORTS

P4-26 BAGHOUSE BUILDING & DUCTING

P4-27 BAGHOUSE BUILDING & DUCTING

P4-28 BAGHOUSE BUILDING & DUCTING

P4-29 RAILROAD TRACKS, ORE UNLOADING RAMP, OVERHEAD SUPPORTS, & BAGHOUSE

P4-30 FANHOUSE, LIME STORAGE, & FLUE

P4-31 DUST BUILDING (RINGLING BUILDING)

P4-32 MONIER FLUE, OVERHEAD ACID PIPES, & SUPPORTS

P4-33 FLUE DUCTING AND SUPPORTS

P4-34 FAN HOUSE AND MONIER FLUE

P4-35 BAG HOUSE BUILDINGS & DISTRIBUTION FLUE

LEGEND

- 2007 AND PRIOR DEMOLITION WORK
- EXISTING STRUCTURES
- ▨ 2008 DEMOLITION WORK
- P4-22 PHOTO NUMBER AND VIEWING ANGLE
- MW MONITORING WELL - DO NOT DEMO

NOTES:

- 2008 DEMOLITION STRUCTURES ARE MARKED WITH RED X'S AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT UNDISTURBED.
- DEMOLISH STRUCTURES TO EXTERIOR GRADE UNLESS CONSTRUCTED OF BRICK.
- DEMOLISH BRICK STRUCTURES TO 3 FEET BELOW GRADE.



NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

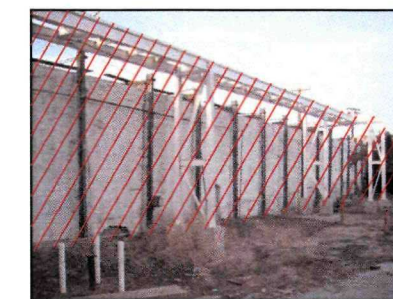
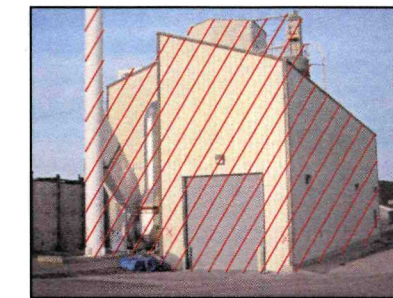
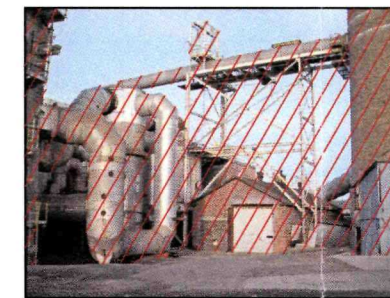
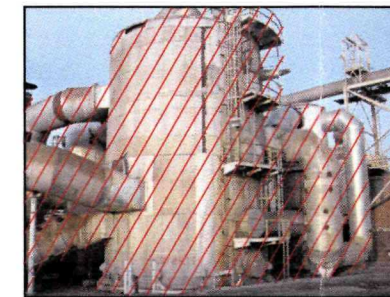
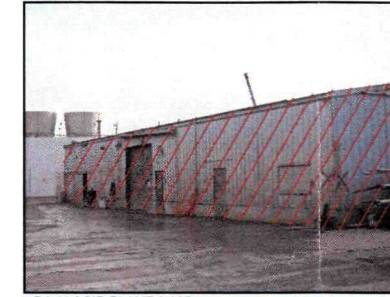
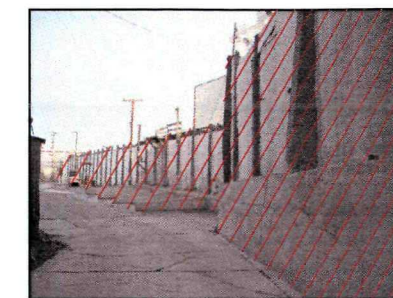
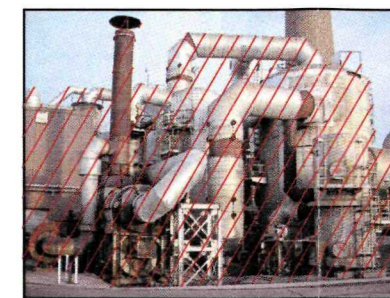
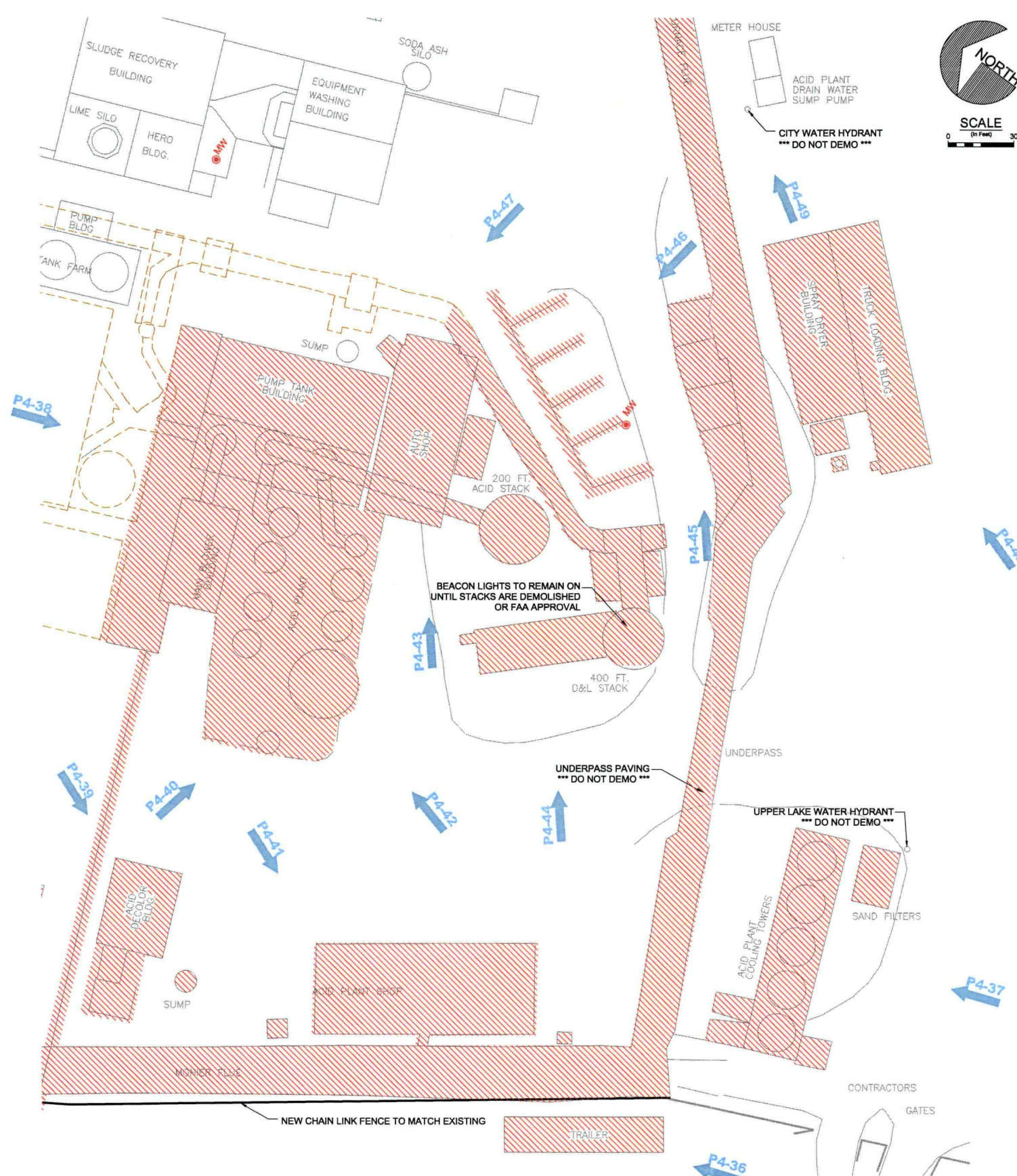
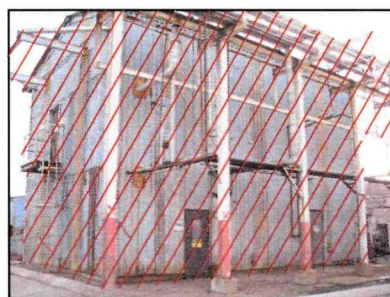
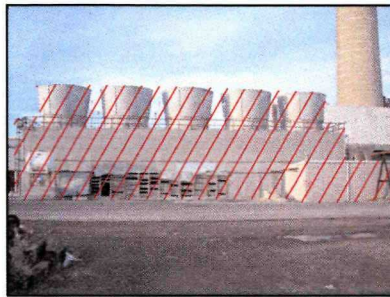
Project No.: 7054  
DRAWN BY JSD/LT 1/17/07  
CHECKED BY MWR 1/19/07  
APPROVED BY MJO 1/19/07  
SCALE: 1"=30'

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3025 Bozeman Avenue  
(406) 443-6160






ASARCO LLC - EAST HELENA PLANT  
2008 CLEANING & DEMOLITION PROJECT  
2008 DEMOLITION  
STACK AND BAGHOUSE AREA

DRAWING FILE NUMBER  
705403H010.dwg  
AUTOCAD 2004 DRAWING (DWG)  
SHEET NUMBER  
9






### LEGEND

- |   |                                |
|---|--------------------------------|
|  | 2007 AND PRIOR DEMOLITION WORK |
|  | EXISTING STRUCTURES            |
|  | 2008 DEMOLITION WORK           |
|  | PHOTO NUMBER AND VIEWING ANGLE |
|  | MONITORING WELL - DO NOT DEMO  |

NOTES:

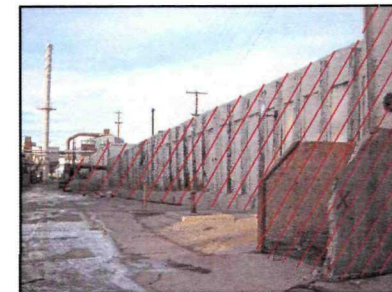
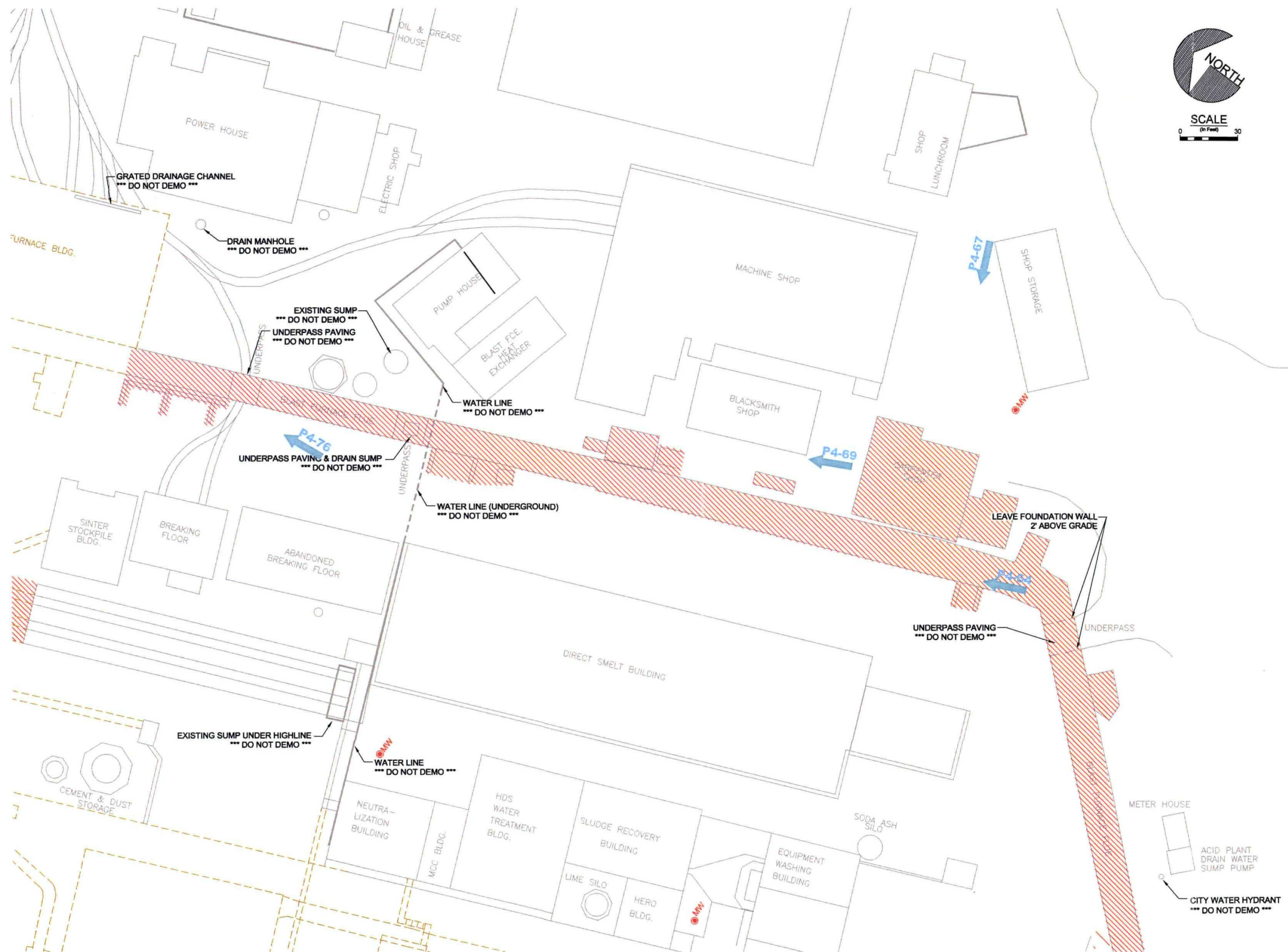
- NOTES:**
1. 2008 DEMOLITION STRUCTURES ARE MARKED WITH RED X'S AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT UNDISTURBED.
  2. IT MAY BE NECESSARY TO REMOVE PARTS OF TEMPORARY CAPS PRIOR TO DEMOLITION. ANY DAMAGED OR REMOVED TEMPORARY CAPS MUST BE REPLACED.
  3. DEMOLISH STRUCTURES TO EXTERIOR GRADE UNLESS INSTRUCTED OF BRICK.
  4. DEMOLISH BRICK STRUCTURES TO 3 FEET BELOW GRADE.

REVISIONS	NO	BY	DATE	DESCRIPTION	REVISIONS	NO	BY	DATE	SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING  0 1  IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	Project No.: 7054  DRAWN BY JSD/ILT 1/17/07 CHECKED BY MWR 1/19/07 APPROVED BY MJO 1/19/07  SCALE: 1"=30'	<b>Hydrometrics, Inc.</b> Consulting Scientists and Engineers  <b>Helena, Montana 59601</b> 3028 Broadway Avenue (406) 443-4180		<b>ASARCO LLC - EAST HELENA PLANT</b> <b>2008 CLEANING &amp; DEMOLITION PROJECT</b>  <b>2008 DEMOLITION</b> <b>MONIER FLUE AND ACID PLANT AREA</b>		DRAWING FILE NUMBER
															705403H011.dwg
															AUTOCAD 2004 DRAWING (DWG)
															SHEET NUMBER
															10





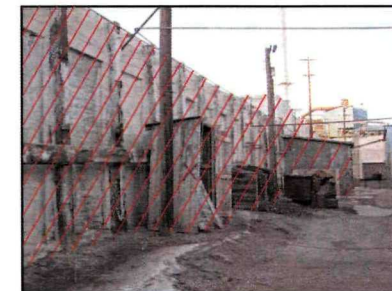




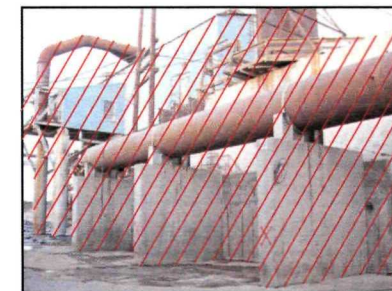
P4-64 WEST SIDE OF BLAST FURNACE FLUE



P4-67 CARPENTER SHOP & MISC. OUT BUILDINGS



P4-69 EAST SIDE OF BLAST FURNACE FLUE & MISC. STRUCTURES



P4-76 BLAST FURNACE FLUE, BINS, & DUCT SUPPORT

#### LEGEND

- 2007 AND PRIOR DEMOLITION WORK
- EXISTING STRUCTURES
- 2008 DEMOLITION WORK
- P4-1 PHOTO NUMBER AND VIEWING ANGLE
- MW MONITORING WELL - DO NOT DEMO

#### NOTES:

- 2008 DEMOLITION STRUCTURES ARE MARKED WITH RED X'S AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT UNDISTURBED.
- DEMOLISH STRUCTURES TO EXTERIOR GRADE UNLESS CONSTRUCTED OF BRICK.
- DEMOLISH BRICK STRUCTURES TO 3 FEET BELOW GRADE.

NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Project No:	7054
DRAWN BY	USDILT 1/17/07
CHECKED BY	MWR 1/19/07
APPROVED BY	MJO 1/19/07
SCALE:	1"=30'

**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
3025 Broadway Avenue  
(406) 443-4100

ASARCO LLC - EAST HELENA PLANT  
2008 CLEANING & DEMOLITION PROJECT  
DEMOLITION PHASE IV -  
BLAST FURNACE FLUE AREA

DRAWING FILE NUMBER	705403H013.dwg
AUTOCAD 2004 DRAWING (DWG)	
SHEET NUMBER	12
REV	





NOTES:

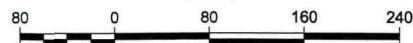
1. PREPARE SUBGRADE BY REMOVING ANY EXPOSED METAL OR SHARP OBJECTS.
2. USE FUMED FINE SLAG OR OTHER MATERIAL SUITABLE AS ON-SITE BORROW TO BRING LOW AREAS AND DEPRESSIONS UP TO A GRADE THAT ENSURES DRAINAGE OF THE CAP TO THE SITE STORMWATER DRAIN SYSTEM.
3. OVERLAP NON-WOVEN GEOTEXTILE A MINIMUM OF 12 INCHES.
4. Z-FOLD AND STITCH REINFORCED POLYETHYLENE (RPE) GEOMEMBRANE AT ALL SEAMS.
5. IN AREAS WHERE LINERS WILL BUTT AGAINST CONCRETE FOUNDATIONS ATTACH WITH 2"x4" TREATED TIMBERS WRAPPED WITH AT LEAST ONE FULL WRAP IN THE LINER AND ANCHORED TO THE CONCRETE WITH CONCRETE ANCHOR BOLTS AS ADDITIONAL SUPPORT USE A SIKA-FLEX CAULK TO SEAL BETWEEN THE LINER AND THE CONCRETE.
6. CONTRACTOR IS RESPONSIBLE FOR THEIR OWN QUANTITY ESTIMATES.
7. COMPLETE MONITORING WELL EXTENSIONS IN ACCORDANCE WITH MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (MDNRC) MONITORING WELL REGULATIONS AND BY A LICENSED MONITORING WELL CONSTRUCTOR. SEE DETAIL 10/14.
8. COMPLETE LINER JUNCTIONS AT MONITORING WELLS, POWER POLES, AND WATER LINES ACCORDING TO DETAIL 9/14.
9. GRADE TRANSITIONS BETWEEN EXISTING TEMPORARY CAPS AND 2008 TEMPORARY CAP LINERS SO THAT WATER IS ABLE TO FLOW OFF CAP WITHOUT PONDING. OVERLAP TRANSITIONS AS DESCRIBED IN NOTES 3 AND 4.
10. ENSURE CAP GRADE EXCEEDS 1.5%. CAPS EXCEEDING GRADES OF 30% REQUIRE CONTINUOUS LINES OF SANDBAGS ON 5' SPACING.

LEGEND

- 2007 AND PRIOR DEMOLITION WORK
- EXISTING STRUCTURES
- 2006 TEMPORARY CAP
- 2007 TEMPORARY CAP
- 2008 PROPOSED PERMANENT COVER (PREFERRED OPTION)
- 2008 TEMPORARY CAP (ALTERNATIVE TO PERMANENT COVER)
- 2008 TEMPORARY CAP
- SURFACE WATER DRAINAGE INLET AREAS



SCALE  
(In Feet)



NO	BY	DATE	DESCRIPTION	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION  
BAR IS ONE INCH ON  
ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Project No.: 7054  
DRAWN BY: JSD 1/17/07  
CHECKED BY: MWR 1/19/07  
APPROVED BY: MJO 1/19/07  
SCALE: 1"=80'

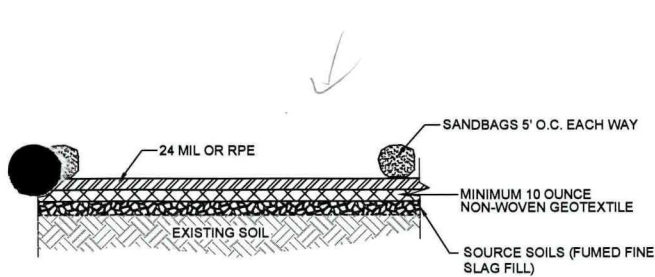
**Hydrometrics, Inc.**  
Consulting Scientists and Engineers  
Helena, Montana 59601  
9020 Bozeman Avenue  
(406) 443-4180

**ASARCO LLC - EAST HELENA PLANT**  
**2008 CLEANING & DEMOLITION PROJECT**

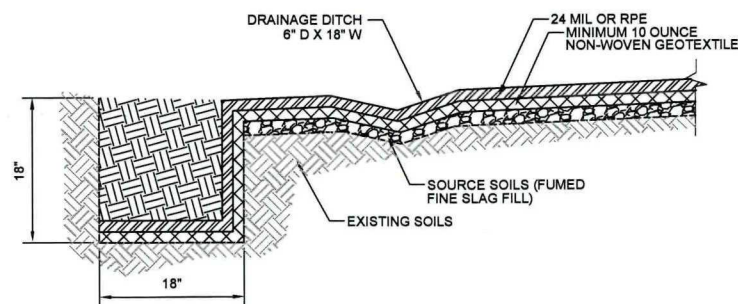
**2008 COVER SYSTEM AND INTERIM CAP - PLAN**

DRAWING FILE NUMBER  
705403H014.dwg  
AUTOCAD 2004 DRAWING (DWG)  
SHEET NUMBER  
13

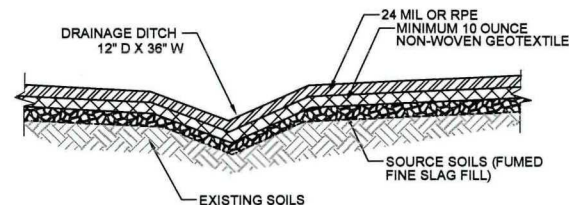




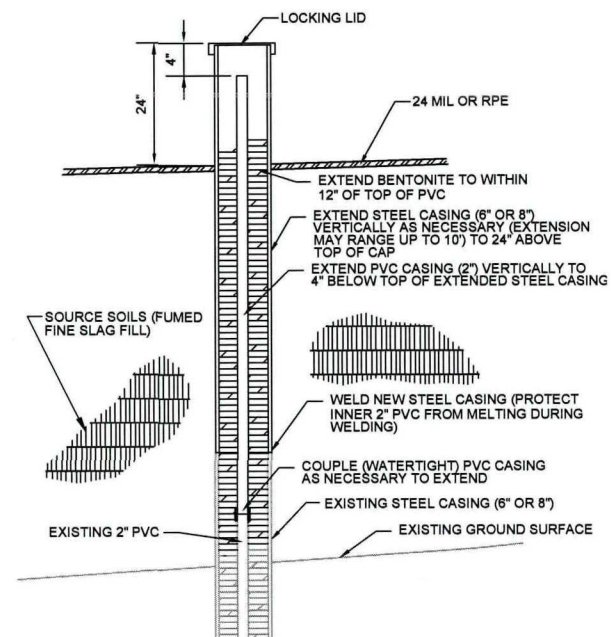
1  
14  
DETAIL  
TEMP CAP  
SCALE: NTS



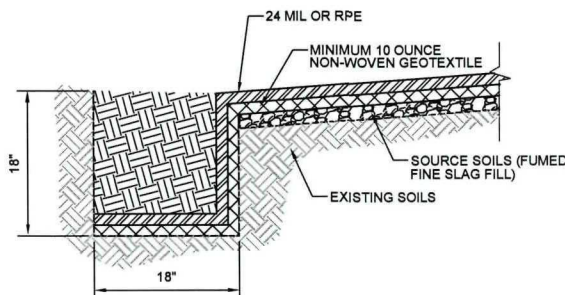
2  
14  
DETAIL  
LINER ANCHOR TRENCH WITH DRAINAGE DITCH  
SCALE: NTS



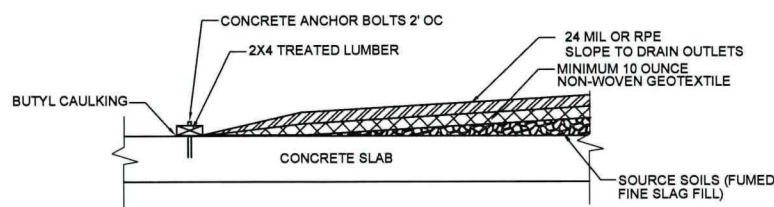
3  
14  
DETAIL  
LINER DRAINAGE DITCH (TYP)  
SCALE: NTS



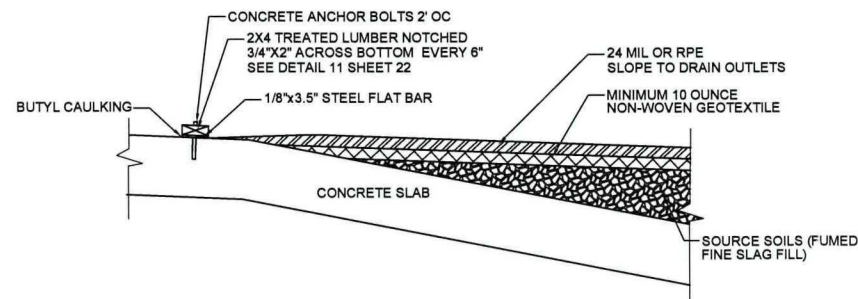
10  
14  
DETAIL  
MONITORING WELL EXTENSION  
SCALE: NTS



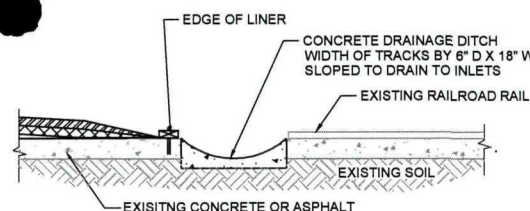
4  
14  
DETAIL  
LINER ANCHOR TRENCH  
SCALE: NTS



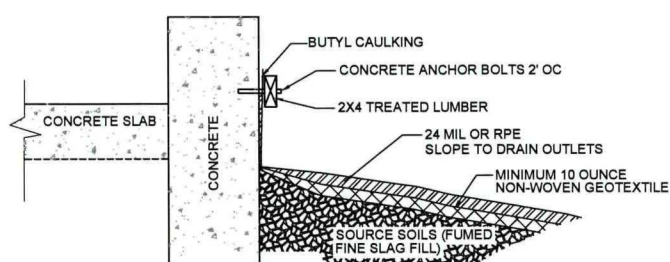
5  
14  
DETAIL  
LINER CONCRETE ANCHOR  
SCALE: NTS



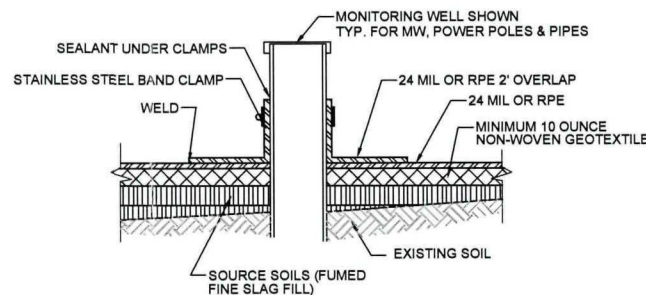
6  
14  
DETAIL  
RUN-ON LINER/CONCRETE ANCHOR  
SCALE: NTS



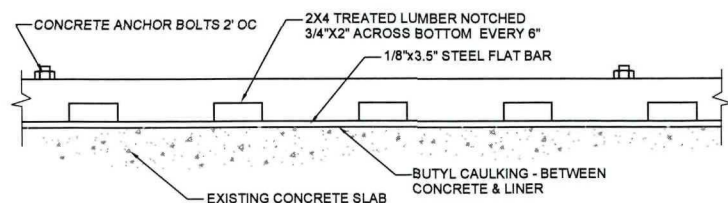
7  
14  
DETAIL  
CONCRETE DRAINAGE DITCH  
SCALE: NTS



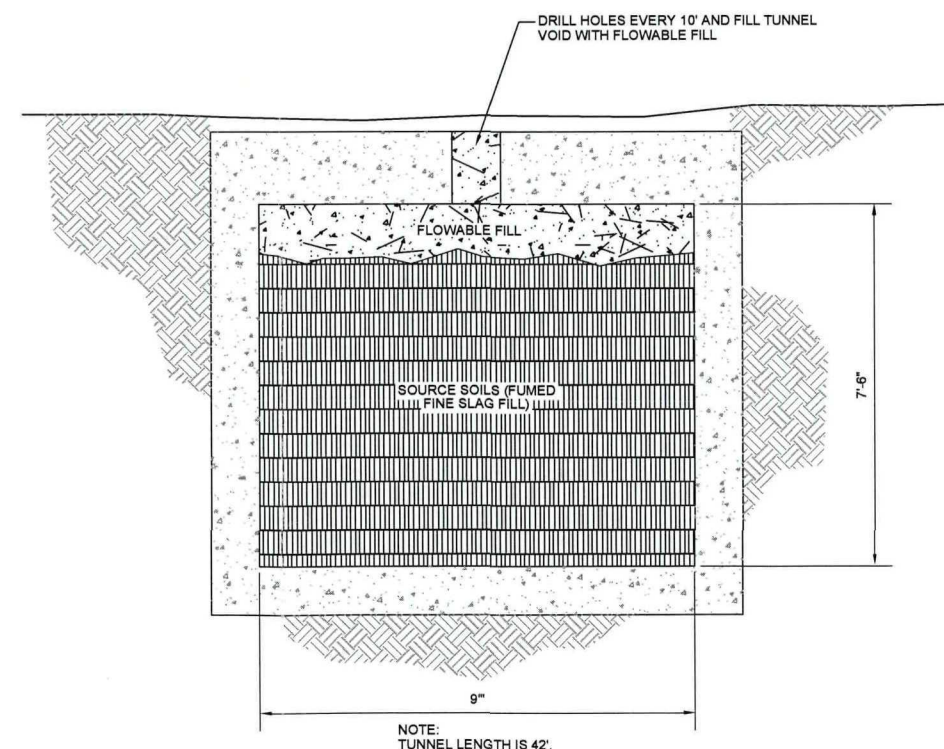
8  
14  
DETAIL  
LINER WALL/FOUNDATION ANCHOR  
SCALE: NTS



9  
14  
DETAIL  
PROTRUSION & LINER CONNECTION (TYP)  
SCALE: NTS



11  
14  
DETAIL  
RUN-ON ANCHOR DETAIL  
SCALE: NTS



SECTION A  
SCALE: NTS  
TUNNEL DETAIL

NO	BY	DATE	DESCRIPTION	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING 0 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	Project No.: 7054 DRAWN BY: JSD 1/19/07 CHECKED BY: MWR 1/23/07 APPROVED BY: MJO 1/24/07 SCALE: AS NOTED	<b>Hydrometrics, Inc.</b> Consulting Scientists and Engineers Helena, Montana 59601 3020 Bozeman Avenue (406) 443-4150	<b>ASARCO LLC - EAST HELENA PLANT</b> 2008 CLEANING & DEMOLITION PROJECT	DRAWING FILE NUMBER 705403H015.dwg AUTOCAD 2004 DRAWING (DWG) SHEET NUMBER 14
---	--	--	---	---

DETAILS

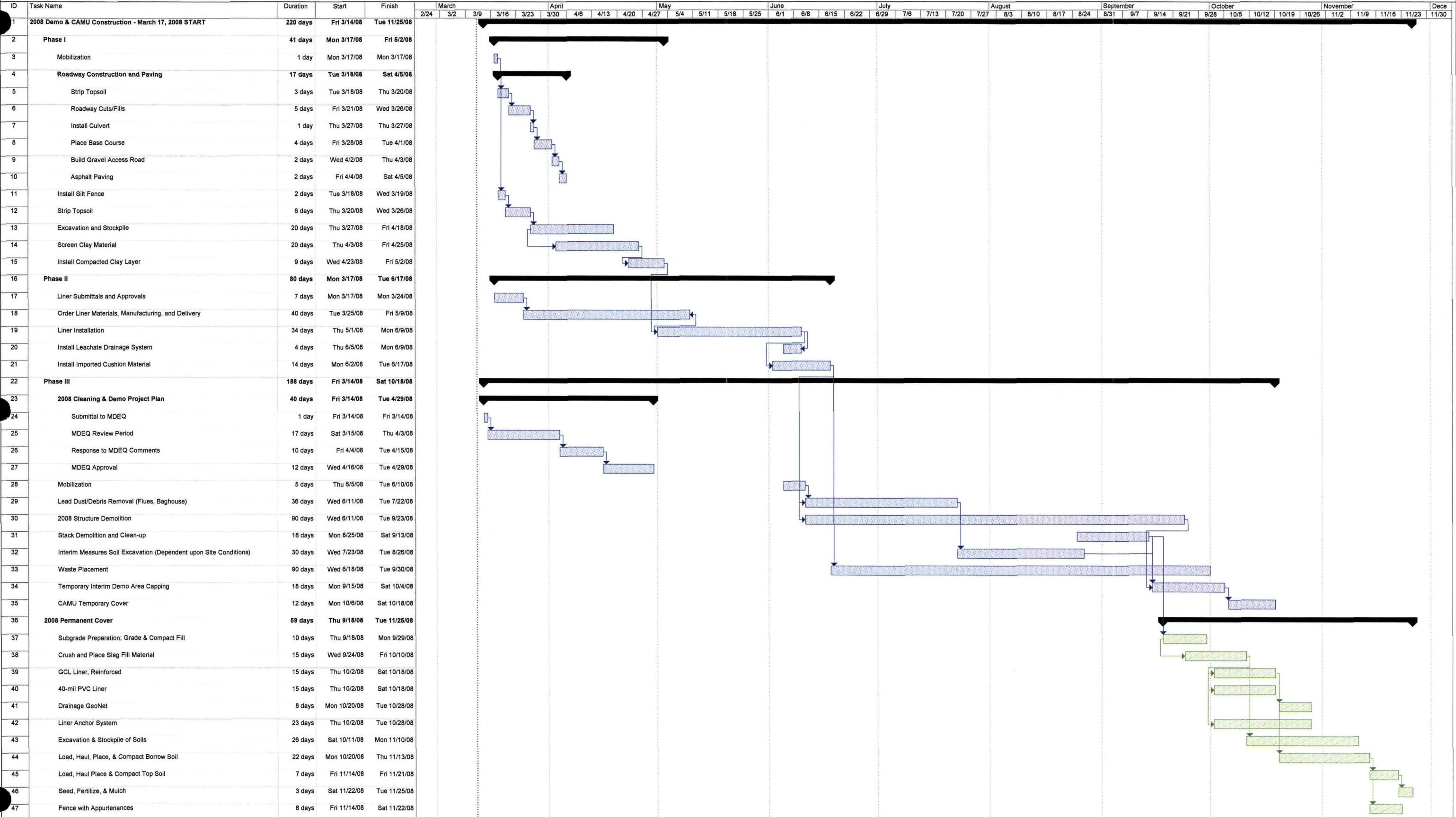


**ATTACHMENT B**

**CONSTRUCTION SCHEDULE**



2008 CLEANING AND DEMOLITION PROJECT  
ASARCO East Helena Facility



**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT**

**2008 WORK PLAN**

**APPENDIX A**

**March 2008**

**COMPREHENSIVE LIST OF PROCESS UNITS  
AND OTHER AREAS OF INTEREST (AOIs) (MARCH 2008)**

Asarco East Helena Plant  
Comprehensive List of Process Units and Other Areas of Interest (AOI)  
Updated March 2008

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>NON-PRODUCTION AREAS</b>				
Paint Shop	Not In Use	Not Required	Not Required	10/29/2003
Paint Storage Area	Storage	Not Required	Not Required	2/23/2004
Methanol Storage	Storage	Not Required	Not Required	10/29/2003
Motor Storage Shop	Storage	Not Required	Not Required	10/29/2003
High Lead Welding	Not In Use	Not Required	Not Required	10/29/2003
Sweeper Garage	Storage	Not Required	Not Required	10/29/2003
Laboratory	Storage	Yes	7/13/2004	2/23/2004
	Demolished November 2006			11/15/2006
Laboratory Storage	Storage	Not Required	Not Required	2/23/2004
	Demolished November 2006			11/15/2006
Sanitary Sewer Plant	Not In Use	Not Required	Not Required	10/29/2003
Acid Plant Shop	Storage	Not Required	Not Required	4/7/2004
Carpenter Shop	Not In Use	Not Required	Not Required	10/29/2003
Main Shop	In Use	Not Required	Not Required	10/29/2003
Auto Shop	In Use	Not Required	Not Required	10/29/2003
Warehouse	Storage	Not Required	Not Required	4/7/2004
Warehouse Pad	Storage	Not Required	Not Required	4/7/2004
Warehouse Chemical Accum.	Storage	Yes	7/13/2004	4/7/2004
Powerhouse	In Use	Not Required	Not Required	4/7/2004
Blacksmith Shop	Not In Use	Not Required	Not Required	10/29/2003
Brick Shed	Not In Use	Not Required	Not Required	10/29/2003
Used Oil Storage	In Use	Not Required	Not Required	10/29/2003
Hazardous Waste Accumulation at 97 Bins	In Use	Not Required	Not Required	10/29/2003
97 Bins	In Use	Not Required	Not Required	10/29/2003
Guzzler Vacuum System	In Use	Not Required	Not Required	4/7/2004
Contractor's Lunchroom	Demolished	Yes	Fall 2007	9/14/2007
Storage Garage	Demolished	Yes	Fall 2007	9/14/2007
Contractor's Changeroom	Demolished	Yes	Fall 2007	9/14/2007
Main Office	Demolished	Yes	Fall 2007	9/14/2007
Natural Gas Valve House	Demolished	Yes	Fall 2007	9/14/2007



Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
TANKS				
Speiss Tank	Demolished	Yes	7/22/2003 8/8/2005 Fall 2006	8/28/2003  11/15/2006
Stormwater Tank		In Use	Yes	7/21/2003 and 8/16/2004
Thornock Tank	In Use	Yes	7/22/2003	8/28/2003
Million Gallon Tanks	In Use	Yes	7/23/2003 and 8/15/2004 9/1/2005 (west)	4/7/2004
Clarified Water Tanks	In Use	Yes	Summer 2002	4/7/2004
Equalization Tank	In Use	Yes	Summer 2002	4/7/2004
Truck Scale Storm Sump	In Use	Yes	7/25/2003 and 8/19/2004 8/8/2005	4/7/2004
Truck Gate Storm Sump	In Use	Yes	7/21/2003	4/7/2004
Thawhouse Storm Sump	In Use	Yes	7/21/2003 8/8/2005	4/7/2004
Baghouse Storm Sump	In Use	Yes	7/25/2003 and 8/19/2004	
G-Pan Storm Sump	Under Cap	Yes	7/22/2003 and 8/20/2004 Fall 2006	4/7/2004  11/15/2006
Footnote: The schedule for cleaning all stormwater tanks and sumps is governed by the amount of sediment accumulation over a given period of time.				

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>ORE STORAGE AREAS</b>				
Thawhouse Building	Demolished	Yes	Fall 2007	10/29/2003
Coverall Buildings - Barnum Building  - Bailey Building	In Use Storage of Demolished Waste	No	Vacuum/Wash-down in 2002 Prior to Lease Pending	10/29/2003
Additional cleaning following removal of waste material to CAMU				
Ringling Building	In Use	Yes	Summer 2002	10/29/2003
Ore Storage Yard	In Use	Not Required	Not Required	4/7/2004
High Grade Building	Not In Use	Yes	Summer 2002	10/29/2003
Hopto Unloading Bins	Not In Use	Yes	Summer 2002	10/29/2003
Direct Smelt Building	In Use	Yes	Summer 2002	10/29/2003
Printed Circuit Board Process	Never Used	Not Required	Not Required	10/29/2003
Footnote: The Direct Smelt Building is use to store road sand, mobile equipment, accumulated HDS filter cake, and CAMU ACM prior to shipping for disposal.				

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>ORE RECEIVING</b>				
Former Crushing Mill	Not In Use	Yes	Summer 1998	4/7/2004
Sample Mill	Not In Use	Not Required	Not Required	4/7/2004
Sample Mill Baghouse Hopper	Not In Use	Yes	8/12/2003	8/28/2003 and 4/7/2004
New Crushing Mill Office	Not In Use	Not Required	Not Required	10/29/2003
New Crushing Mill Floor	Not In Use	No		10/29/2003
New Crushing Mill Belts	Not In Use	No		10/29/2003
New Crushing Mill Baghouse Hopper	Not In Use	Yes	8/5/2003	8/28/2003 10/29/2003
CSHB Truck Bins	Not In Use	No		10/29/2003
A-Conveyor Belt	Not In Use	No		10/29/2003
A-Conveyor Belt Gallery	Not In Use	No		10/29/2003
A-Conveyor Ventilation Pipe	Not In Use	No		10/29/2003
Door to A-Conveyor Vent. Pipe	Not In Use	No		10/29/2003
CSHB Feeders	Not In Use	No		10/29/2003
CSHB Under Feeders	Not In Use	No		10/29/2003
CSHB Feeder Tops	Not In Use	No		10/29/2003
CSHB Tracks	Storage of Waste	No		10/29/2003
CSHB Main Bins	Not In Use	No		10/29/2003
CSHB Office	Not In Use	Not Required	Not Required	10/29/2003
CSHB Crane Decks	Not In Use	No		
CSHB Bin 13	Not In Use	Yes	Summer 2002	8/28/2003
CSHB Bin 14	Not In Use	No		10/29/2003
CSHB Bin 15	Not In Use	No		10/29/2003
CSHB Bin 16	Not In Use	Yes	6/26/2003	8/28/2003
CSHB North Baghouse Hopper	Not In Use	Yes	8/6/2003	8/28/2003
CSHB South Baghouse Hopper	Not In Use	Yes	8/7/2003	8/28/2003
CSHB Feeder Baghouse Hopper	Not In Use	Yes	8/11/2003	8/28/2003
No. 6 Baghouse Hopper	Not In Use	Yes	8/11/2003	8/28/2003
CSHB Stack Base	Not In Use	Found Clean	Not Required	8/28/2003
Dustmaster Tank	Not In Use	Yes	8/14/2003	8/28/2003
CSHB I-Bin	In Use Storage of Waste	No	Pending	4/7/2004 12/22/2004 6/23/2005 9/1/2005

Footnote: The CSHB (concentrate storage and handling building) and new crushing mill underwent extensive mechanical cleaning during the summers of 2001 and 2002. Unfortunately, some of these areas have not been adequately cleaned to meet work plan criteria. Therefore, these areas are assumed to require additional cleaning.

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>SINTER PLANT</b>				
Hammer Mill	Demolished	Yes	September 2006	10/29/03,11/15/06
B-Conveyor Belt	Demolished	Yes	September 2006	10/29/03,11/15/06
B-Conveyor Belt Gallery	Demolished	Yes	September 2006	10/29/03,11/15/06
Nodulizer	Demolished	Yes	September 2006	10/29/03,11/15/06
C-Belt Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
Ignition Hopper	Demolished	Yes	September 2006	10/29/03,11/15/06
Feed Hopper	Demolished	Yes	September 2006	10/29/03,11/15/06
1st Deck Ventilation Pipe	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Machine	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Machine Access	Demolished	Yes	September 2006	10/29/03,11/15/06
Pallet Room	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Cleanout Chutes (2)	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Windboxes (11)	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Ventilation Pipe	Demolished	Yes	September 2006	10/29/03,11/15/06
Fan Deck Oil Room	Demolished	Yes	September 2006	10/29/03,11/15/06
1A Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
1 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
2 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
3 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
4 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
F-Belt Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
F-Belt Conveyor Gallery	Demolished	Yes	September 2006	10/29/03,11/15/06
Elevator	Demolished	Yes	September 2006	10/29/03,11/15/06
G-Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
E-Belt	Demolished	Yes	September 2006	10/29/03,11/15/06
Smooth Rolls	Demolished	Yes	September 2006	10/29/03,11/15/06
Spike Rolls	Demolished	Yes	September 2006	10/29/03,11/15/06
Returns Tank	Demolished	Yes	September 2006	10/29/03,11/15/06
Vibrating Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Storage Bin	Demolished	Yes	September 2006	4/7/2005 10/29/03,11/15/06
Coke Storage Bin	Demolished	Yes	September 2006	4/7/2005 10/29/03,11/15/06
Sinter Basement	Demolished	Yes	September 2006	10/29/03,11/15/06
Larry Pit	Demolished	Yes	September 2006	10/29/03,11/15/06
Nurnbers 1,2,3,4,and 5 Fan Housing	Demolished	Yes	September 2006	10/29/03,11/15/06

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<i>SINTER PLANT (continued)</i>				
Weak Gas Ventilation Flue System	Demolished	Yes	September 2006	10/29/03,11/15/06
Strong Gas Ventilation Flue System	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Baghouse Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Hot Cottrell Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Ignition Furnace Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Downdraft Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Cyclones	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Crushing Circuit Ventilation System	Demolished	Yes	Summer 2006	11/15/06
No. 7 Baghouse Hopper	Not In Use	Yes	3/3/2003	8/28/2003
No. 8 Baghouse Hopper	Not In Use	Yes	3/3/2003	8/28/2003
Sinter Plant Baghouse Hoppers	Demolished	Yes	3/3/2003	8/28/03, 11/15/06
Sinter Storage Building Ledges, Roof, and Ventilation	Not In Use	Yes	9/15/2004	8/28/2003
Sinter Storage Building Floor	Not In Use	Yes	8/21/2003	8/28/2003
Stack Interior/Base	Not In Use	Yes	November 2007	

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>ACID PLANT</b>				
Hot Cottrell Hoppers	Demolished	Yes	Fall 2006	8/28/03, 11/15/06
Hot Cottrell Building	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Inlet Header	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Outlet Header	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Scrubber Tower Ductwork	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Scrubber Towers	Demolished	Yes	3/5/03, Fall 2006	8/28/03, 11/15/06
Mist Precipitator Ductwork	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Mist Precipitator Base	Demolished	Yes	2/25/03, Fall 2006	8/28/03, 11/15/06
Mist Precipitator Floor Sump	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Pump Tanks	Not In Use	Yes	2/26/03	8/28/03, 11/15/06
Heat Exchangers	Not In Use	No	Fall 2006	4/7/04
Tail Gas Ductwork	Not In Use	No		4/7/04
Tail Gas Stack Interior/Base	Not In Use	Yes	November 2007	4/7/2004
Acid Dust Bin/Building	Demolished	Yes	3/5/03, Fall '06	8/28/03, 11/15/06
93% Acid Storage Tanks	Not In Use	Yes	Oct./Nov. 2005	4/7/2004
93% Dry/Intermediate/Final Tower Tanks (3 Tanks)	Not In Use	Yes	Oct./Nov. 2005	4/7/2004 6/23/2005
98% Acid Storage Tank	Demolished	Yes	Oct./Nov. 2005	4/7/04, 11/15/06 6/23/2005 9/1/2005
Decolorization Acid Tanks	Not In Use	Yes	Oct./Nov. 2005	6/23/2005
Hydrogen Peroxide Tanks	Empty	Not Required	Not Required	4/7/2004
Converter Catalyst	Mothballed	Not Required	Not Required	4/7/2004
Acid Cooling Tower Base	Not In Use	Yes	Summer 2002	4/7/2004
Acid Dust Recovery Building	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
80 Ton Dust Recovery Tank	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Access Piping	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Footnote: The strong acid contained in acid plant storage vessels was removed during the fourth quarter 2005.				

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>BLAST FURNACE</b>				
Matte Breaking Building (Old)	Not In Use	Yes	8/23/2005	10/29/03, 4/7/05 6/23/05, 9/1/05
Matte Breaking Building (New)	Not In Use	Found Clean	Not Required	10/29/03, 4/7/05
Highline 47 Feeder Belts	Not In Use	Yes	10/11/2004	10/29/03, 4/7/05 6/23/2005
	Demolished	Yes	Summer 2007	9/14/2007
Highline 47 Open Bins	Not In Use	Yes	9/11/03, 10/15/04	10/29/03, 4/7/05
	Demolished	Yes	Summer 2007	9/14/2007
Highline Storage Bins	Not In Use	Yes	Summer 2001	10/29/03, 4/7/05
	Demolished	Yes	Summer 2007	9/14/2007
Portland Cement Silo	Not In Use	Yes	9/3/2003	10/29/03, 4/7/05
Blast Furnace Dust Silo	Not In Use	Yes	Summer 2001	4/7/2005
Blast Charge Floor	Not In Use	Yes	8/15/2004	10/29/03, 4/7/05
	Demolished	Yes	Summer 2007	9/14/2007
Scrap Conveyor	Demolished	Yes	9/20/2004	4/7/2005 6/23/2005
Outside Blast Flue	Not In Use	Yes	10/20/2004	4/7/2005
Blast Feed Floor	Not In Use	Yes	11/10/2004	4/7/2005
	Demolished	Yes		9/14/2007
Blast Ventilation/Process Gas System	Not In Use	Yes	11/10/2004	4/7/2005
	Demolished	Yes	Summer 2007	9/14/2007
Blast Agglomerator Building	Demolished	Yes	8/26/2003	10/29/2003
Blast Agglomerator Feed Tank	Demolished	Yes	Summer 2001	10/29/2003
No. 1 Blast Tapping Floor	Not In Use	Yes	12/05/2004	10/29/03, 4/7/05 6/23/2005
	Demolished	Yes	Fall 2007	9/14/2007
No. 3 Blast Tapping Floor	Not In Use	Yes	12/05/2004	10/29/03, 4/7/05 6/23/2005
	Demolished	Yes	Fall 2007	9/14/2007
No. 1 and 3 Crucible	Not In Use	Not Required	Not Required	4/7/2005 6/23/2005
	Demolished	Yes	Fall 2007	9/14/2007
Motor Switch Tracks	Not In Use	Yes	12/10/2004	4/7/2005 6/23/2005
No. 1/3 Blast Furnace Flue	Not In Use	Yes	12/2005	6/23/05, 12/22/05, 1/9/06
	Demolished	Yes	Fall 2007	9/14/2007
Blast Furnace Flue	Not In Use	Yes	Summer 2002	
Blast Furnace Flue Crossover	Not In Use	No		
Monier Flue at Baghouse Inlet	Not In Use	Yes	Third Qrt. 2005	6/23/2005, 9/1/2005, 9/16/2005,

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<i>BLAST FURNACE (continued)</i>				
Blast Baghouse Cellars	Not In Use	Yes	Summer 2001	
Blast Baghouse Thimble Floor	Not In Use	No		
Blast Furnace Dust Cleanout Baghouse Hopper	Not In Use	No		
Blast Furnace Dust Cleanout	Not In Use	No		
Railroad Loadout Baghouse	Never Used	Not Required	Not Required	
Blast Stack Base	Not In Use	Yes	November 2007	



Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>DROSS PLANT</b>				
Speiss Long Pit	Demolished	Yes	Sum '02, Fall '06	6/23/05, 11/15/06
Speiss Short Pit	Demolished	Yes	Sum '02, Fall '06	6/23/05, 11/15/06
Under Reverb Furnace	Demolished	Yes	Fall 2006	6/23/05, 11/15/06
No. 4 Kettle Setting	Demolished	Yes	Fall 2006	6/23/05, 11/15/06
Under Kettle Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Kettles	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Kettle Settings	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Ventilation System	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Lead Granulator	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Lead Granulator Belt	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Furnace Upper Deck	Demolished	Yes	Fall 2006	11/15/2006
On Kettle Floor	Demolished	Yes	Fall 2006	11/15/2006
Dross Bullion Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Speiss Pit Doors	Demolished	Yes	9/15/03, Fall '06	2/23/04, 11/15/06
Lead Pots	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Reverb Furnace	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Plant Crane Deck	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Plant Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Speiss Cleanout Bin	Demolished	Yes	Sum '02, Fall '06	2/23/04, 11/15/06
Router Dust Tank	Demolished	Yes	9/16/03, Fall '06	2/23/04, 11/15/06
Dross Plant Baghouse Hoppers	Demolished	Yes	2/24/2003 Fall 2007	2/23/04 9/14/2007
Dross Plant Stack	Demolished	Yes	9/15/2003 Fall 2007	2/23/04 9/14/2007

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>FORMER ZINC PLANT</b>				
Tetrahedrite Drying and Baghouse	Demolished	Not Required	Not Required	4/7/2004 and 9/24/2004
Former Zinc Furnace	Demolished	Not Required	Not Required	4/7/2004
Former Zinc Furnace Retaining Wall	Cleaned & Demolished	Yes	11/23/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Holding Furnace	Cleaned & Demolished	Yes	8/8/2005	6/23/2005 9/1/2005
Zinc Plant Balloon Flue	Cleaned & Demolished	Yes	10/24/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Cooling Tubes	Cleaned & Demolished	Yes	10/30/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Main Railcar Loadout	Cleaned & Demolished	Yes	11/12/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Baghouse	Cleaned & Demolished	Yes	12/10/2004	8/8/03, 4/7/04 9/24/04, 10/28/04 1/27/05
Zinc Plant Baghouse Bags	Cleaned & Demolished	Yes	7/13/2004	8/8/03, 4/7/04 9/24/04, 10/28/04
Zinc Plant Loadout Building	Cleaned & Demolished	Yes	12/1/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Stack	Demolished	Yes	1/24/2005	1/27/2005

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
<b>WATER TREATMENT</b>				
Scrubber Blowdown Recirculation Tanks	Not In Use	Yes	12/14/2004	1/27/2005
Scrubber Blowdown Clarifier	Not In Use	Yes	12/17/2004	1/27/2005
Soda Ash Tank and Feed System	Not In Use	Yes	12/10/2004	1/27/2005
Sludge Storage Tank	Not In Use	Yes	12/13/2004	1/27/2005
Sulfur Dioxide Stripper	Not In Use	Yes	12/16/2004	1/27/2005
Neutralization Building Tank	Not In Use	Yes	12/20/2004	1/27/2005
Neutralization Building Plate Clarifier	Not In Use	Yes	12/20/2004	2/23/2004 1/27/2005
Filter Press Water Holding Tank	Not In Use	Yes	12/22/2004	1/27/2005
Neutralization Building Surge Tank	Not In Use	Yes	12/22/2004	2/24/2004 1/27/2005
Filter Press Discharge Tank	Not In Use	Yes	12/8/2004	1/27/2005
HDS Water Treatment	In Use	Not Required	Not Required	2/23/2004
Sludge Recovery Operations	In Use	Not Required	Not Required	2/23/2004
Carwash Equipment Washdown	In Use	Not Required	Not Required	2/23/2004
HERO Facility	Never Used	Not Required	Not Required	2/23/2004

**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT**

**2008 WORK PLAN**

**APPENDIX B**

**March 2008**

**FUMED SLAG ANALYTICAL DATA**

# ANALYTICAL SUMMARY REPORT

May 02, 2005

Iver Johnson

MT DEQ

PO Box 200901

Helena, MT 59620

## COPY

**RECEIVED**

MAY 05 2005

Dept. of Enviro. Quality  
Waste & Underground  
Tank Management Bureau

Workorder No.: H05040130

Project Name: ASARCO Slag Pile

Energy Laboratories Inc received the following 10 samples from MT DEQ on 4/14/2005 for analysis.

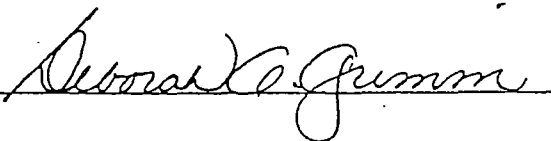
Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H05040130-001	ASP01-B3	04/14/05 14:15	04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-002	ASP02-B5	04/14/05 14:21	04/14/05	Solid	Same As Above
H05040130-003	ASP03-B14	04/14/05 14:28	04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Biphenyls (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short List
H05040130-004	ASP04-C4	04/14/05 14:37	04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-005	ASP05-C9	04/14/05 14:44	04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Biphenyls (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short List

H05040130-006	ASP06-D16	04/14/05 14:50 04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-007	ASP07-F3	04/14/05 14:57 04/14/05	Solid	Same As Above
H05040130-008	ASP08-G2	04/14/05 15:04 04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Biphenyls (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short List
H05040130-009	ASP09-G4	04/14/05 15:07 04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-010	ASP10-H16	04/14/05 15:15 04/14/05	Solid	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By:



## LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-001  
Client Sample ID: ASP01-B3

Report Date: 05/02/05  
Collection Date: 04/14/05 14:15  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	34.9	mg/kg		5.0		SW6020	04/27/05 00:49 / rth
Arsenic	130	mg/kg		5.0		SW6020	04/27/05 00:49 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 03:48 / jjw
Cadmium	3.1	mg/kg		1.0		SW6010B	04/20/05 19:24 / jjw
Chromium	60.8	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw
Cobalt	164	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw
Iron	196000	mg/kg	D	40		SW6010B	04/20/05 19:28 / jjw
Lead	134	mg/kg		5.0		SW6010B	04/20/05 19:28 / jjw
Manganese	11400	mg/kg		5.0		SW6010B	04/22/05 03:48 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 13:51 / KC
Nickel	8.4	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw
Phosphorus	652	mg/kg		10		SW6010B	04/22/05 03:48 / jjw
Selenium	6.4	mg/kg		5.0		SW6020	04/27/05 00:49 / rth
Zinc	13200	mg/kg		5.0		SW6010B	04/20/05 19:28 / jjw

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

## LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-002  
Client Sample ID: ASP02-B5

Report Date: 05/02/05  
Collection Date: 04/14/05 14:21  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	46.7	mg/kg		5.0		SW6020	04/27/05 00:56 / rth
Arsenic	135	mg/kg		5.0		SW6020	04/27/05 00:56 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 03:51 / jjw
Cadmium	4.1	mg/kg		1.0		SW6010B	04/20/05 19:32 / jjw
Chromium	59.4	mg/kg		5.0		SW6010B	04/20/05 19:32 / jjw
Cobalt	207	mg/kg		5.0		SW6010B	04/20/05 19:32 / jjw
Iron	243000	mg/kg	D	80		SW6010B	04/22/05 03:51 / jjw
Lead	140	mg/kg		5.0		SW6010B	04/20/05 19:32 / jjw
Manganese	11700	mg/kg		5.0		SW6010B	04/22/05 03:51 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 13:57 / KC
Nickel	20.4	mg/kg		5.0		SW6020	04/27/05 00:56 / rth
Phosphorus	584	mg/kg		10		SW6010B	04/22/05 03:51 / jjw
Selenium	8.5	mg/kg		5.0		SW6020	04/27/05 00:56 / rth
Zinc	16900	mg/kg		5.0		SW6010B	04/22/05 03:51 / jjw

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-003  
Client Sample ID: ASP03-B14

Report Date: 05/02/05  
Collection Date: 04/14/05 14:28  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
PHYSICAL CHARACTERISTICS							
Moisture	0.500	wt%		0.0100		SW3550A	04/22/05 08:15 / MC
CHEMICAL CHARACTERISTICS							
pH, 1:2	8.6	s.u.		0.1		ASA10-3	04/25/05 16:18 / srm
Chloride, 1:2	1.99	mg/kg		1.00		ASA10-3	04/26/05 11:49 / qed
METALS, TOTAL							
Antimony	33.7	mg/kg		5.0		SW6020	04/27/05 01:03 / rth
Arsenic	118	mg/kg		5.0		SW6020	04/27/05 01:03 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:02 / jjw
Cadmium	2.6	mg/kg		1.0		SW6010B	04/20/05 19:35 / jjw
Chromium	67.1	mg/kg		5.0		SW6010B	04/20/05 19:35 / jjw
Cobalt	117	mg/kg		5.0		SW6010B	04/20/05 19:35 / jjw
Iron	264000	mg/kg	D	80		SW6010B	04/22/05 04:02 / jjw
Lead	63.8	mg/kg		5.0		SW6010B	04/20/05 19:35 / jjw
Manganese	13200	mg/kg		5.0		SW6010B	04/22/05 04:02 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 13:59 / KC
Nickel	14.5	mg/kg		5.0		SW6020	04/27/05 01:03 / rth
Phosphorus	612	mg/kg		10		SW6010B	04/22/05 04:02 / jjw
Selenium	8.4	mg/kg		5.0		SW6020	04/27/05 01:03 / rth
Zinc	13500	mg/kg		5.0		SW6010B	04/22/05 04:02 / jjw
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Benzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Bromobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Bromochloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Bromodichloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Bromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Carbon tetrachloride	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Chlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Chloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
2-Chloroethyl vinyl ether	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Chloroform	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Chloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
2-Chlorotoluene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
4-Chlorotoluene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Chlorodibromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,2-Dibromoethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Dibromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,2-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-003  
Client Sample ID: ASP03-B14

Report Date: 05/02/05  
Collection Date: 04/14/05 14:28  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
1,3-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,4-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Dichlorodifluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,2-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
cis-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
trans-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,3-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
2,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
cis-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
trans-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Ethylbenzene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Methyl tert-butyl ether (MTBE)	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Methylene chloride	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Methyl ethyl ketone	ND	mg/kg		4.0		SW8260B	04/21/05 16:42 / trr
Styrene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1,1,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1,1,2,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Tetrachloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Toluene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1,1-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,1,2-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Trichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Trichlorofluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
1,2,3-Trichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Vinyl chloride	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
m+p-Xylenes	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
o-Xylene	ND	mg/kg		0.20		SW8260B	04/21/05 16:42 / trr
Surr: p-Bromofluorobenzene	134	%REC			78-160	SW8260B	04/21/05 16:42 / trr
Surr: Dibromofluoromethane	116	%REC			70-132	SW8260B	04/21/05 16:42 / trr
Surr: 1,2-Dichloroethane-d4	114	%REC			60-135	SW8260B	04/21/05 16:42 / trr
Surr: Toluene-d8	120	%REC			75-138	SW8260B	04/21/05 16:42 / trr
SEMI-VOLATILE ORGANIC COMPOUNDS							
Acenaphthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:55 / sm
Acenaphthylene	ND	mg/kg		0.33		SW8270C	04/21/05 13:55 / sm
Anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 13:55 / sm
Benzo(a)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 13:55 / sm

Report RL - Analyte reporting limit.  
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-003  
Client Sample ID: ASP03-B14

Report Date: 05/02/05  
Collection Date: 04/14/05 14:28  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
SEMI-VOLATILE ORGANIC COMPOUNDS							
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Chrysene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Fluorene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Naphthalene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Surr: 2-Fluorobiphenyl	82.5	%REC			30-115	SW8270C	04/21/05 13:55 / sm
Surr: Nitrobenzene-d5	83.7	%REC			23-120	SW8270C	04/21/05 13:56 / sm
Surr: Terphenyl-d14	98.6	%REC			18-137	SW8270C	04/21/05 13:56 / sm
POLYCHLORINATED BIPHENYLS (PCB'S)							
Aroclor 1016	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1221	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1232	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1242	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1248	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1254	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1260	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1262	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Aroclor 1268	ND	mg/kg		0.017		SW8052	04/24/05 03:13 / law
Surr: Decachlorobiphenyl	96.0	%REC			50-126	SW8052	04/24/05 03:13 / law
Surr: Tetrachloro-m-xylene	86.0	%REC			42-115	SW8052	04/24/05 03:13 / law
Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3650) prior to analysis							

Sample extract received a Sulfuric Acid Clean-up (EPA Method 3665) and a Sulfur Clean-up (EPA Method 3660) prior to analysis

Report RL - Analyte reporting limit.  
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ.  
Project: ASARCO Slag Pile  
Lab ID: H05040130-004  
Client Sample ID: ASP04-C4

Report Date: 05/02/05  
Collection Date: 04/14/05 14:37  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	43.5	mg/kg		5.0		SW6020	04/27/05 01:10 / rlh
Arsenic	155	mg/kg		5.0		SW6020	04/27/05 01:10 / rlh
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:06 / jjw
Cadmium	5.1	mg/kg		1.0		SW6010B	04/20/05 19:39 / jjw
Chromium	71.2	mg/kg		5.0		SW6010B	04/20/05 19:39 / jjw
Cobalt	212	mg/kg		5.0		SW6010B	04/20/05 19:39 / jjw
Iron	273000	mg/kg	D	80		SW6010B	04/22/05 04:06 / jjw
Lead	364	mg/kg		5.0		SW6010B	04/20/05 19:39 / jjw
Manganese	12200	mg/kg		5.0		SW6010B	04/22/05 04:06 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:01 / KC
Nickel	22.9	mg/kg		5.0		SW6020	04/27/05 01:10 / rlh
Phosphorus	586	mg/kg		10		SW6010B	04/22/05 04:06 / jjw
Selenium	12.1	mg/kg		5.0		SW6020	04/27/05 01:10 / rlh
Zinc	17900	mg/kg		5.0		SW6010B	04/22/05 04:06 / jjw

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-005  
Client Sample ID: ASP05-C9

Report Date: 05/02/05  
Collection Date: 04/14/05 14:44  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
PHYSICAL CHARACTERISTICS							
Moisture	0.800	wt%		0.0100		SW3550A	04/22/05 08:15 / MC
CHEMICAL CHARACTERISTICS							
pH, 1:2	9.0	s.u.		0.1		ASA10-3	04/25/05 16:18 / srm
Chloride, 1:2	2.89	mg/kg		1.00		ASA10-3	04/26/05 12:13 / qed
METALS, TOTAL							
Antimony	37.1	mg/kg		5.0		SW6020	04/27/05 01:44 / rth
Arsenic	117	mg/kg		5.0		SW6020	04/27/05 01:44 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:13 / jjw
Cadmium	3.1	mg/kg		1.0		SW6010B	04/20/05 19:42 / jjw
Chromium	74.4	mg/kg		5.0		SW6010B	04/20/05 19:42 / jjw
Cobalt	153	mg/kg		5.0		SW6010B	04/20/05 19:42 / jjw
Iron	252000	mg/kg	D	80		SW6010B	04/22/05 04:13 / jjw
Lead	160	mg/kg		5.0		SW6010B	04/20/05 19:42 / jjw
Manganese	11800	mg/kg		5.0		SW6010B	04/22/05 04:13 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:04 / KC
Nickel	15.9	mg/kg		5.0		SW6020	04/27/05 01:44 / rth
Phosphorus	707	mg/kg		10		SW6010B	04/22/05 04:13 / jjw
Selenium	12.7	mg/kg		5.0		SW6020	04/27/05 01:44 / rth
Zinc	18500	mg/kg		5.0		SW6010B	04/22/05 04:13 / jjw
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg		0.20		SW82505	04/21/05 17:16 / trr
Benzene	ND	mg/kg		0.20		SW82508	04/21/05 17:16 / trr
Bromobenzene	ND	mg/kg		0.20		SW82508	04/21/05 17:16 / trr
Bromochloromethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Bromodichloromethane	ND	mg/kg		0.20		SW82508	04/21/05 17:16 / trr
Bromomethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Carbon tetrachloride	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Chlorobenzene	ND	mg/kg		0.20		SW82508	04/21/05 17:16 / trr
Chloroethane	ND	mg/kg		0.20		SW82508	04/21/05 17:16 / trr
2-Chloroethyl vinyl ether	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Chloroform	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Chloromethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
2-Chlorotoluene	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
4-Chlorotoluene	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Chlorodibromomethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
1,2-Dibromoethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
Dibromomethane	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr
1,2-Dichlorobenzene	ND	mg/kg		0.20		SW82608	04/21/05 17:16 / trr

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-005  
Client Sample ID: ASP05-C9

Report Date: 05/02/05  
Collection Date: 04/14/05 14:44  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
1,3-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,4-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Dichlorodifluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,2-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
cis-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
trans-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,3-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
2,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
cis-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
trans-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Ethylbenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Methyl tert-butyl ether (MTBE)	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Methylene chloride	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Methyl ethyl ketone	ND	mg/kg		4.0		SW8260B	04/21/05 17:16 / trr
Styrene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1,1,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1,1,2,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Tetrachloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Toluene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1,1-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,1,2-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Trichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Trichlorofluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
1,2,3-Trichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Vinyl chloride	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
m+p-Xylenes	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
o-Xylene	ND	mg/kg		0.20		SW8260B	04/21/05 17:16 / trr
Surr: p-Bromofluorobenzene	116	%REC			78-160	SW8260B	04/21/05 17:16 / trr
Surr: Dibromofluoromethane	104	%REC			70-132	SW8260B	04/21/05 17:16 / trr
Surr: 1,2-Dichloroethane-d4	104	%REC			60-136	SW8260B	04/21/05 17:16 / trr
Surr: Toluene-d8	104	%REC			75-138	SW8260B	04/21/05 17:16 / trr
SEMI-VOLATILE ORGANIC COMPOUNDS							
Aceaphthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Acenaphthylene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(a)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm

Report: RL - Analyte reporting limit.  
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



## LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-005  
Client Sample ID: ASP05-C9

Report Date: 05/02/05  
Collection Date: 04/14/05 14:44  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
SEMI-VOLATILE ORGANIC COMPOUNDS							
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Chrysene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Fluorene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Naphthalene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Surr: 2-Fluorobiphenyl	88.6	%REC			30-115	SW8270C	04/21/05 14:39 / sm
Surr: Nitrobenzene-d5	86.9	%REC			23-120	SW8270C	04/21/05 14:39 / sm
Surr: Terphenyl-d14	98.9	%REC			16-137	SW8270C	04/21/05 14:39 / sm
POLYCHLORINATED BIPHENYLS (PCB'S)							
Aroclor 1016	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1221	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1232	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1242	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1248	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1254	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1260	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1262	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1268	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Surr: Decachlorobiphenyl	140	%REC	S		50-126	SW8082	04/24/05 03:40 / law
Surr: Tetrachloro-m-xylene	108	%REC			42-115	SW8082	04/24/05 03:40 / law

Sample extract received a Sulfuric Acid Clean-up (EPA Method 3655) and a Sulfur Clean-up (EPA Method 3660) prior to analysis.

Report Definitions:  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-006  
Client Sample ID: ASP06-D16

Report Date: 05/02/05  
Collection Date: 04/14/05 14:50  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	42.5	mg/kg		5.0		SW6020	04/27/05 01:51 / rlh
Arsenic	130	mg/kg		5.0		SW6020	04/27/05 01:51 / rlh
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:17 / jjw
Cadmium	2.2	mg/kg		1.0		SW6010B	04/20/05 19:46 / jjw
Chromium	68.4	mg/kg		5.0		SW6010B	04/20/05 19:46 / jjw
Cobalt	173	mg/kg		5.0		SW6010B	04/20/05 19:46 / jjw
Iron	305000	mg/kg	D	80		SW6010B	04/22/05 04:17 / jjw
Lead	55.5	mg/kg		5.0		SW6010B	04/20/05 19:46 / jjw
Manganese	11800	mg/kg		5.0		SW6010B	04/22/05 04:17 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:06 / KC
Nickel	18.8	mg/kg		5.0		SW6020	04/27/05 01:51 / rlh
Phosphorus	647	mg/kg		10		SW6010B	04/22/05 04:17 / jjw
Selenium	11.0	mg/kg		5.0		SW6020	04/27/05 01:51 / rlh
Zinc	19100	mg/kg		5.0		SW6010B	04/22/05 04:17 / jjw

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

# LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-007  
Client Sample ID: ASP07-F3

Report Date: 05/02/05  
Collection Date: 04/14/05 14:57  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	42.7	mg/kg		5.0		SW6020	04/27/05 01:58 / rth
Arsenic	102	mg/kg		5.0		SW6020	04/27/05 01:58 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:20 / jjw
Cadmium	1.9	mg/kg		1.0		SW6010B	04/20/05 19:49 / jjw
Chromium	70.5	mg/kg		5.0		SW6010B	04/20/05 19:49 / jjw
Cobalt	171	mg/kg		5.0		SW6010B	04/20/05 19:49 / jjw
Iron	286000	mg/kg	D	80		SW6010B	04/22/05 04:20 / jjw
Lead	45.3	mg/kg		5.0		SW6010B	04/20/05 19:49 / jjw
Manganese	12100	mg/kg		5.0		SW6010B	04/22/05 04:20 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:10 / KC
Nickel	17.4	mg/kg		5.0		SW6020	04/27/05 01:58 / rth
Phosphorus	578	mg/kg		10		SW6010B	04/22/05 04:20 / jjw
Selenium	13.8	mg/kg		5.0		SW6020	04/27/05 01:58 / rth
Zinc	19100	mg/kg		5.0		SW6010B	04/22/05 04:20 / jjw

Report  
Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



# LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-008  
Client Sample ID: ASP08-G2

Report Date: 05/02/05  
Collection Date: 04/14/05 15:04  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
PHYSICAL CHARACTERISTICS							
Moisture	0.800	wt%		0.0100		SW3550A	04/22/05 08:15 / MC
CHEMICAL CHARACTERISTICS							
pH, 1:2	9.2	s.u.		0.1		ASA10-3	04/25/05 16:18 / srm
Chloride, 1:2	1.06	mg/kg		1.00		ASA10-3	04/26/05 12:48 / qed
METALS, TOTAL							
Antimony	43.8	mg/kg		5.0		SW6020	04/27/05 02:05 / rth
Arsenic	119	mg/kg		5.0		SW6020	04/27/05 02:05 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:24 / jjw
Cadmium	2.5	mg/kg		1.0		SW6010B	04/20/05 20:00 / jjw
Chromium	59.8	mg/kg		5.0		SW6010B	04/20/05 20:00 / jjw
Cobalt	194	mg/kg		5.0		SW6010B	04/20/05 20:00 / jjw
Iron	290000	mg/kg	D	80		SW6010B	04/22/05 04:24 / jjw
Lead	116	mg/kg		5.0		SW6010B	04/20/05 20:00 / jjw
Manganese	13100	mg/kg		5.0		SW6010B	04/22/05 04:24 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:12 / KC
Nickel	17.9	mg/kg		5.0		SW6020	04/27/05 02:05 / rth
Phosphorus	720	mg/kg		10		SW6010B	04/22/05 04:24 / jjw
Selenium	9.9	mg/kg		5.0		SW6020	04/27/05 02:05 / rth
Zinc	21100	mg/kg		5.0		SW6010B	04/22/05 04:24 / jjw
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Benzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Bromobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Bromochloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Bromodichloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Bromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Carbon tetrachloride	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Chlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Chloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
2-Chloroethyl vinyl ether	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Chloroform	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Chloromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
2-Chlorotoluene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
4-Chlorotoluene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Chlorodibromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,2-Dibromoethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Dibromomethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,2-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-008  
Client Sample ID: ASP08-G2

Report Date: 05/02/05  
Collection Date: 04/14/05 15:04  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
VOLATILE ORGANIC COMPOUNDS							
1,3-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,4-Dichlorobenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Dichlorodifluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,2-Dichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
cis-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
trans-1,2-Dichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,3-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
2,2-Dichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
cis-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
trans-1,3-Dichloropropene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Ethylbenzene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Methyl tert-butyl ether (MTBE)	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Methylene chloride	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Methyl ethyl ketone	ND	mg/kg		4.0		SW8260B	04/21/05 17:51 / trr
Styrene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1,1,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1,2,2-Tetrachloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Tetrachloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Toluene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1,1-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,1,2-Trichloroethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Trichloroethene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Trichlorofluoromethane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
1,2,3-Trichloropropane	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Vinyl chloride	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
m+p-Xylenes	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
o-Xylene	ND	mg/kg		0.20		SW8260B	04/21/05 17:51 / trr
Surr: p-Bromofluorobenzene	11E	%REC			78-160	SW8260B	04/21/05 17:51 / trr
Surr: Dibromofluoromethane	10E	%REC			70-132	SW8260B	04/21/05 17:51 / trr
Surr: 1,2-Dichloroethane-d4	10E	%REC			60-136	SW8260B	04/21/05 17:51 / trr
Surr: Toluene-d8	10E	%REC			75-138	SW8260B	04/21/05 17:51 / trr
SEMI-VOLATILE ORGANIC COMPOUNDS							
Acenaphthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Acenaphthylene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo[a]anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm

Report: RL - Analyte reporting limit.  
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-008  
Client Sample ID: ASP08-G2

Report Date: 05/02/05  
Collection Date: 04/14/05 15:04  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
SEMI-VOLATILE ORGANIC COMPOUNDS							
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Chrysene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Fluorene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Naphthalene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Surr: 2-Fluorobiphenyl	75.9	%REC			30-115	SW8270C	04/21/05 15:21 / sm
Surr: Nitrobenzene-d5	76.0	%REC			23-120	SW8270C	04/21/05 15:21 / sm
Surr: Terphenyl-d14	88.9	%REC			18-137	SW8270C	04/21/05 15:21 / sm
POLYCHLORINATED BIPHENYLS (PCB'S)							
Aroclor 1016	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1221	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1232	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1242	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1248	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1254	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1260	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1262	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1268	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Surr: Decachlorobiphenyl	125	%REC			50-126	SW8082	04/24/05 04:08 / law
Surr: Tetrachloro-m-xylene	90.0	%REC			42-115	SW8082	04/24/05 04:08 / law

Sample extract received a Sulfuric Acid Clean-up (EPA Method 3655) and a Sulfur Clean-up (EPA Method 3650) prior to analysis.

Report RL - Analyte reporting limit.  
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.





## LABORATORY ANALYTICAL REPORT

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-009  
Client Sample ID: ASP09-G4

Report Date: 05/02/05  
Collection Date: 04/14/05 15:07  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	57.6	mg/kg		5.0		SW6020	04/27/05 02:12 / rth
Arsenic	109	mg/kg		5.0		SW6020	04/27/05 02:12 / rth
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:27 / jjw
Cadmium	1.4	mg/kg		1.0		SW6010B	04/20/05 20:04 / jjw
Chromium	90.0	mg/kg		5.0		SW6010B	04/20/05 20:04 / jjw
Cobalt	204	mg/kg		5.0		SW6010B	04/20/05 20:04 / jjw
Iron	294000	mg/kg	D	80		SW6010B	04/22/05 04:27 / jjw
Lead	64.0	mg/kg		5.0		SW6010B	04/20/05 20:04 / jjw
Manganese	11900	mg/kg		5.0		SW6010B	04/22/05 04:27 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:14 / KC
Nickel	20.6	mg/kg		5.0		SW6020	04/27/05 02:12 / rth
Phosphorus	562	mg/kg		10		SW6010B	04/22/05 04:27 / jjw
Selenium	12.2	mg/kg		5.0		SW6020	04/27/05 02:12 / rth
Zinc	20100	mg/kg		5.0		SW6010B	04/22/05 04:27 / jjw

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

**LABORATORY ANALYTICAL REPORT**

Client: MT DEQ  
Project: ASARCO Slag Pile  
Lab ID: H05040130-010  
Client Sample ID: ASP10-H16

Report Date: 05/02/05  
Collection Date: 04/14/05 15:15  
Date Received: 04/14/05  
Matrix: Solid

Analyses	Result	Units	Qual	MCL/		Method	Analysis Date / By
				RL	QCL		
METALS, TOTAL							
Antimony	34.1	mg/kg		5.0		SW6020	04/22/05 05:23 / rlh
Arsenic	117	mg/kg		5.0		SW6020	04/22/05 05:23 / rlh
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 04:31 / jjw
Cadmium	2.1	mg/kg		1.0		SW6010B	04/20/05 20:07 / jjw
Chromium	59.0	mg/kg		5.0		SW6010B	04/20/05 20:07 / jjw
Cobalt	137	mg/kg		5.0		SW6010B	04/20/05 20:07 / jjw
Iron	305000	mg/kg	D	80		SW6010B	04/22/05 04:31 / jjw
Lead	103	mg/kg		5.0		SW6010B	04/20/05 20:07 / jjw
Manganese	10400	mg/kg		5.0		SW6010B	04/22/05 04:31 / jjw
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 14:16 / KC
Nickel	14.7	mg/kg		5.0		SW6020	04/22/05 05:23 / rlh
Phosphorus	710	mg/kg		10		SW6010B	04/22/05 04:31 / jjw
Selenium	9.1	mg/kg		5.0		SW6020	04/22/05 05:23 / rlh
Zinc	22200	mg/kg		5.0		SW6010B	04/22/05 04:31 / jjw

Report RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

## **APPENDIX 4-1-2**

### **SUMMARY OF SLAG TESTING ANALYSES INCLUDING TEST BASIN WATER QUALITY, SLAG BOTTLE ROLL TESTS AND EP TOXICITY TESTS**

1 OF 300 WATER QUALITY ANALYSES - ASARCO EAST HELENA

SITE NAME	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG	FUMED SLAG
SAMPLE DATE	12/30/86	04/02/87	04/22/87	04/22/87	05/22/87	05/22/87	05/22/87	05/22/87	07/12/87	07/15/87
LAP	ASARCO	ASARCO	ASARCO	CHMTC	ASARCO	ASARCO	CHMTC	CHMTC	ASARCO	ASARCO
REMARKS	BOTTLE			SPLIT	REPLICATE		SPLIT	REPLICATE	REPLICATE	
SAMPLE NUMBER		8704-1	8704-20		8705-50	8705-47			8707-02	8707-01
<b>PHYSICAL PARAMETERS</b>										
WATER TEMPERATURE (C)			7.5			9.7				
SPEC. COND. (UMHOS/CM) FIELD			2235		2268	2265			2137	2150
SPEC. COND. (UMHOS/CM) LAB	115	1950	2250			2320				2400
PH FIELD			4.16 *		7.48	7.69				7.46
PH LAB	9.9	7.77	4.81			7.52				7.55
TDS MEAS. @ 180 DEG. C	94	1842	1903 *	993		2086	2227			1912 *
OXYGEN (O) DISS			4.3			4.3				4.1
DEPTH TO SWL BELOW MP (FT)			8.74 *			8.01				
<b>COMMON IONS</b>										
CALCIUM (CA)	12	510	454	449.0		422	417.0	412.0		321
MAGNESIUM (MG)	0.49	20	25.5	27.40		20.2	25.10	24.90		22.9
SODIUM (NA)	5.1	76	71.5	76.6		85	72.5	71.8		74
POTASSIUM (K)	3.9	54	65	60.80		74	136.00	122.00		68
BICARBONATE (HCO3) (LAB)	11.0	260 *	102			98				84
CARBONATE AS CO3 (LAB)	19	11	11			11				11.0
SULFATE (SO4)	10	1450	1425	1240.0		1338	1304.0			1200
CHLORIDE (CL)	18	6.0	7.0	10.0		7.0	30.0			4.0
<b>TRACE ELEMENTS</b>										
ARSENIC (AS) DISS	0.19	0.0325	0.0283	0.0198	0.038	0.030	0.0530	0.0320	0.057 *	0.039 *
ARSENIC (AS) +3			0.014						0.0214	0.060 *
ARSENIC (AS) +5			0.010						0.0722 *	0.0268
CADMIUM (CD) DISS	0.003	0.075	0.060	0.0720	0.051	0.051	0.0520	0.0500	0.055	0.049
COFFER (CU) DISS	0.008	0.280 *	0.193	0.2260	0.125	0.128	0.1480	0.1340	0.118	0.110
IRON (FE) DISS	0.11	0.020	0.020	0.100	0.044	0.045	0.100	0.100	0.020	0.020
IRON (FE II)			0.010 *						0.060	0.080
LEAD (PB) DISS	0.017	0.045 *	0.030 *	0.0334	0.019	0.020	0.0323	0.0432	0.016	0.021
MANGANESE (MN) DISS	0.017	1.060	1.440	2.640	1.910	1.930	2.660	2.640	2.930	2.890
ZINC (ZN) DISS	0.023	3.580	3.700	4.450	2.830	2.890	2.860	2.820	2.500	2.300

All quantities in milligrams per liter unless otherwise noted. Blank line indicates parameter not tested.

Output Date: 03-19-1989  
HWQ-6/86-R1

# SLAG WATER QUALITY ANALYSES - ASARCO EAST HELENA

SITE NAME	FUMED SLAG	FUMED SLAG	UNFUMED SLAG	UNFUMED SLAG	UNFUMED SLAG	UNFUMED SLAG	UNFUMED SLAG	UNFUMED SLAG	UNFUMED SLAG
SAMPLE DATE	09/22/87	09/22/87	12/30/84	04/22/87	04/22/87	05/22/87	05/22/87	07/15/87	09/22/87
LAR	ASARCO	ASARCO	ASARCO	ASARCO	CHMTC	CHMTC	ASARCO	ASARCO	ASARCO
REMARKS	REPLICATE		BOTTLE		SPLIT	SPLIT			
SAMPLE NUMBER	8709-06	8709-04	ROLL TEST	8704-24			8705-48	8707-03	8709-07
<b>PHYSICAL PARAMETERS</b>									
WATER TEMPERATURE (C)		16 *		10.5			10.9		17 *
SPEC. COND. (UMHOS/CM) FIELD	1368	1366		16296 *			19978	19850	
SPEC. COND. (UMHOS/CM) LAB		1350	200	16500			20200	22000	12200
PH FIELD				9.49			9.97 *	9.48	
PH LAB		7.63	10.4	9.25			9.6	9.73	9.69
TDS MEAS. @ 180 DEG. C		1114	206	14183 *	7298	18720	18523	18172 *	10984
OXYGEN (O) DISS		4.0		4.5			3.2	3.0	4.1
DEPTH TO SWL BELOW MP (FT)		7.74		8.83			7.85		7.02
<b>COMMON IONS</b>									
CALCIUM (CA)		126.5	17	371	437.0		361	426	345
MAGNESIUM (MG)		11	0.22	8.5	8.76		6.7	6.4	4.2
SODIUM (NA)		45	19	2900	2960.0		3890	3800	2200
POTASSIUM (K)		65	22	1950	158.00		2650	2550	1540
ALKALINITY AS CaCO3 (LAR)							587		
BICARBONATE (HCO3) (LAR)		72	11.0	486 *			11	11.0	11.0
CARBONATE AS CO3 (LAR)		11.0	36	11			284	163	197
HYDROXIDE (OH)							38	46	30
SULFATE (SO4)		480 *	16	9200	2480.0	2463.0	1200	11750	6750
CHLORIDE (CL)		3.0	16	57	63.0	75.0	66	74	35
<b>TRACE ELEMENTS</b>									
ARSENIC (AS) DISS	0.075 *	0.054 *	0.31	0.620	0.5130		0.353	0.590 *	0.553
ARSENIC (AS) +3				0.400				0.550	
ARSENIC (AS) +5				0.030				0.054	
CADMIUM (CD) DISS	0.021	0.021	0.003	0.030 *	0.0063		0.003	0.005	0.003
COFFER (CU) DISS	0.055	0.056	0.008	0.130	0.1190		0.128	0.085	0.043
IRON (FE) DISS	10.020	10.020	0.070	0.150	10.190		0.225 *	10.020	10.020
IRON (FE II)	0.02	10.01		10.010				0.070	10.01
LEAD (PB) DISS	0.023	0.026	0.083	0.098 *	0.1430		0.0505	0.021 *	0.094
MANGANESE (MN) DISS	1.590	1.540	10.017	0.155 *	0.139		0.083	0.090	0.050
ZINC (ZN) DISS	0.613	0.788 *	0.053	0.100 *	0.090		0.048	0.030	0.023

All quantities in milligrams per liter unless otherwise noted. Blank line indicates parameter not tested.

Output Date: 03-19-1989  
HWQ-6/86-E1

TABLE 1  
East Helena

SLAG SAMPLE LEACHATE ANALYSIS

1979

979  
SARCO  
lab No.

		(PPM in Leachate)								
SARCO ab No.	Description	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	(Zn)
3278	Slag 1 (2)	.018	.3	.08	<.01	.6	<.001	<.005	<.01	3.5
3279	Slag 2 (2)	<.014	.1	.13	<.01	<.1	<.001	<.005	<.01	2.6
3280	Slag 3 (2)	.020	.1	.03	<.01	3.4	<.001	<.005	<.01	2.1
3281	Slag 4 (2)	<.014	.2	<.01	<.01	<.1	<.001	<.005	<.01	1.0
3282	Slag 5 (Pb)	.032	.2	<.01	<.01	3.3	<.001	<.005	<.01	5.0
3283	Slag 6 (Pb)	<.014	.1	.15	<.01	1.0	<.001	<.005	<.01	6.0

Maximum Contaminant  
levels for Non-  
toxic Leachates

0.5 10.0 0.1 0.5 0.5 .02 0.1 0.5 ---\*

NOTE →

Currently unspecified but estimated to be 50 ppm (10 times the Drinking Water Standard).

15



ASARCO Incorporated  
Department of Environmental Sciences  
EAST HELENA  
Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1985 SAMPLE DATE	As ppm	Cd ppm	Pb ppm
3658 Air Cooled	Blast Furnace Slag	5/ 7	.12	.002	5.3
3659 Granulated	Blast Furnace Slag	5/ 7	.047	<.002	.050

ASARCO Inc. Incorporated  
Department of Environmental Sciences  
EAST HELENA  
Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1985 SAMPLE DATE	Ag ppm	As ppm	Ba ppm	Cd ppm	Cr ppm
7860	TCLP-Fumed Blast Furnace Slag	10/21	<.002	.45	4.6	.007	.01
7861	TCLP-Unfumed Blast Furnace Slag	10/21	<.002	1.2	1.6	.25	.01

ASARCO LAB #	SAMPLE DESCRIPTION	1985 SAMPLE DATE	Hg ppb	Pb ppm	Se ppm
7860	TCLP-Fumed Blast Furnace Slag	10/21	<.005	.28	.004
7861	TCLP-Unfumed Blast Furnace Slag	10/21	<.001	10.	.010

ASARCO Incorporated  
Department of Environmental Sciences  
EAST HELENA  
Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1985 SAMPLE DATE	Ag ppm	As ppm	Ba ppm	Cd ppm	Cr ppm
6378	Air Cooled Slag	8/15	<.005	.012	<1.0	.002	<.17
6379	Granulated Slag	8/15	<.005	.010	<1.0	<.002	<.17

ASARCO LAB #	SAMPLE DESCRIPTION	1985 SAMPLE DATE	Hg ppb	Pb ppm	Se ppm	pH
6378	Air Cooled Slag	8/15	<.50	1.1	<.080	9.2
6379	Granulated Slag	8/15	<.50	.050	<.080	8.0

ASARCO Incorporated  
Department of Environmental Sciences  
EAST HELENA  
Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1983 SAMPLE DATE	Pb ppm	Cd ppm	Cr ppm	Ag ppm	Ba ppm
11370	2-4 mo. old Slag Composite	11/28	9.8	3.9	<.030	<.008	7.2
11371	1 week old Slag Composite	11/28	3.9	<.004	<.030	<.008	8.7

ASARCO LAB #	SAMPLE DESCRIPTION	1983 SAMPLE DATE	As ppm	Se ppm	Hg ppb	pH
11370	2-4 mo. old Slag Composite	11/28	.20	.012	<.50	10.
11371	1 week old Slag Composite	11/28	.35	<.004	<.50	10.

	<u>Ba</u>	<u>Pb</u>	<u>Cd</u>	<u>Cr</u>	<u>Ag</u>	<u>Se</u>	<u>Hg</u>	<u>As</u>
Maximum allowable levels of contaminants in the leachate of a non-toxic material.....	100.	5.0	1.0	5.0	5.0	1.0	.2	5.0



storage area. The sediments are being stored in a protected environment to prevent contamination of the adjacent area from dispersion of the sediments by wind and water. The sediments are located on a concrete pad to prevent contact with adjacent soils. A containment berm around the perimeter of the sediment pile diverts run-on. A geomembrane cover over the sediments prevents wind and water dispersion and eliminates subsequent generation of leachate.

Approximately 31,000 cubic yards of dewatered sediments were transported to the Lower Ore Storage Area. Four thousand cubic yards of these sediments were smelted prior to the stockpile being covered with a geomembrane liner in October 1997. The sediments will remain in this interim storage facility while EPA considers Asarco's request to modify the sediment smelting requirement of the ROD, and instead dispose of these materials in the on-site CAMU.

#### **4.1.4 Slag**

The effect of the slag pile on groundwater and surface water was evaluated as part of the 1990 Comprehensive RI/FS. The evaluation was conducted in accordance with procedures presented in the Comprehensive RI/FS Work Plan (Hydrometrics 1987). Based on the results of the evaluation, the RI/FS concluded that the potential for impacts to groundwater and surface water from slag is low and the subsequent ROD did not specify any remedial action for the Slag Pile Operable Unit. Post-RI/FS monitoring at adjacent surface water and groundwater monitoring sites is on-going. A summary of the slag investigation and the findings of the RI relative to slag are presented below.

##### **4.1.4.1 Investigation of Potential Groundwater Impacts**

##### **Slag Infiltration Test Basin Construction, Water Level Measurement, Water Quality Sampling and Analysis**

Infiltration and percolation of precipitation into the slag pile were directly measured in slag test basins constructed in fumed and unfumed slag. Fumed slag is a by-product of the zinc

recovery process, which consisted of air injection into molten slag to recover zinc oxide. Unfumed slag is a by-product of the blast furnace which has not been further processed through the zinc recovery process. The zinc recovery process was suspended in 1982 and zinc is no longer recovered from the slag. Since 1982, unfumed slag has been placed in an area segregated from fumed slag.

Two slag infiltration catchment basins were constructed; one in a typical location in the fumed slag, and one in a typical location in unfumed slag. Construction of the test basins included removal of a 2 to 3 meter layer of slag, placement of an impervious 36-mil reinforced Hypalon liner in the excavation, installation of a collection sump, and replacement of the slag. Figure 4-1-8 shows the slag test basin design.

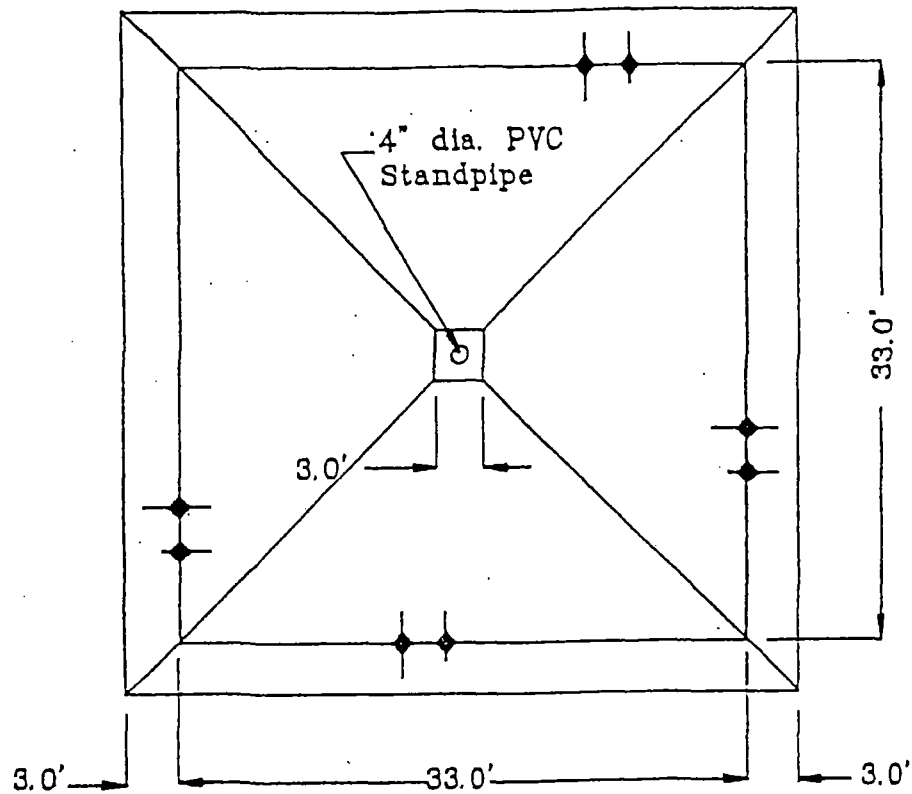
Water elevations in the collection sumps were measured periodically, and after rainfall or snowmelt events to determine the actual accumulation of water in the slag basins. Collected water was pumped from the sump, sent to the TSC laboratory, and tested for the parameters listed in Table 3-2-2. Analytical results of water collected in the test basins are summarized in Appendix 4-1-2.

### **Slag Material Sampling and Analysis**

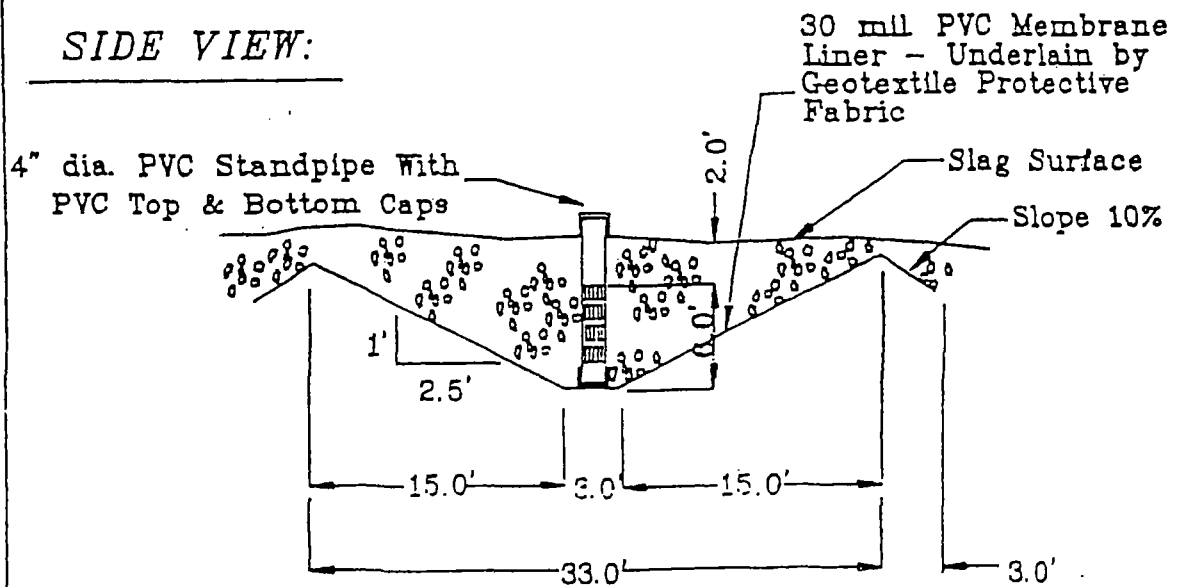
To supplement slag information collected from the test basins, samples of slag were collected from the test basin sites and sent to the TSC lab for "bottle roll" tests. Estimates of slag leachability were obtained by conducting "bottle roll" test on slag samples. Bottle roll tests involved placing samples of slag in bottles in the laboratory, adding deionized water, agitating the bottles for approximately 24 hours, then analyzing the water for concentrations of arsenic and metals. Details of the bottle roll extraction tests are in the Quality Assurance Project Plan (QAPP) Addendum to the Phase II Water Resources Investigation Work Plan (Hydrometrics, 1986). Bottle roll test results are in Appendix 4-1-2.

FIGURE 4-1-8 SLAG TEST BASIN DESIGN

PLAN VIEW:



SIDE VIEW:



NOTE: PVC Standpipe is schedule 40, capped on both ends and perforated with saw-cut slots from 2.0' to 8.0' beneath the slag surface.

In addition to the slag sampling and bottle roll test performed as part of the East Helena RI activities, additional slag samples were collected and analyzed using the EP toxicity procedure. Results of these analyses are also in Appendix 4-1-2.

### **Assessment of Groundwater Impacts**

In an effort to estimate infiltration rates, the volume of water retained in the slag test basins was calculated for 13 time intervals, beginning December 23, 1986 and ending February 10, 1988. These volumes were compared to the volumes of precipitation during the same periods and converted to percentages, as summarized in Table 4-1-10. The percentage of precipitation retained in the basins varied from -6.7% to 61.9% in the fumed slag, and -45% to 61.8% in the unfumed slag (negative percentages indicate evaporation rates exceed precipitation collected in the test basins). Although there is a relationship of test basin water level fluctuations to precipitation (see Figures 4-1-9 and 4-1-10), the relationship may be complicated by variable evaporation, hence, infiltration rates are variable.

Concentrations of arsenic and metals from test basin water samples (see Appendix 4-1-2) were low compared to plant area groundwater. Dissolved arsenic varied from 0.0198 mg/l to 0.075 mg/l in the fumed slag, and 0.353 to 0.590 mg/l in the unfumed slag during the study period. Dissolved cadmium varied from 0.003 to 0.075 mg/l in the fumed slag, and 0.003 to 0.0063 mg/l in the unfumed slag. Dissolved lead varied from 0.016 to 0.045 mg/l in the fumed slag, and 0.021 to 0.098 mg/l in the unfumed slag.

The concentrations of arsenic and metals from bottle roll testing (See Appendix 4-1-2) were similar to the slag test basin water quality. For the fumed slag, dissolved arsenic was 0.19 mg/l, cadmium was 0.003 mg/l, and lead was less than 0.017 mg/l. For the unfumed slag, dissolved arsenic was 0.31 mg/l, cadmium was 0.003 mg/l and lead was 0.083 mg/l.

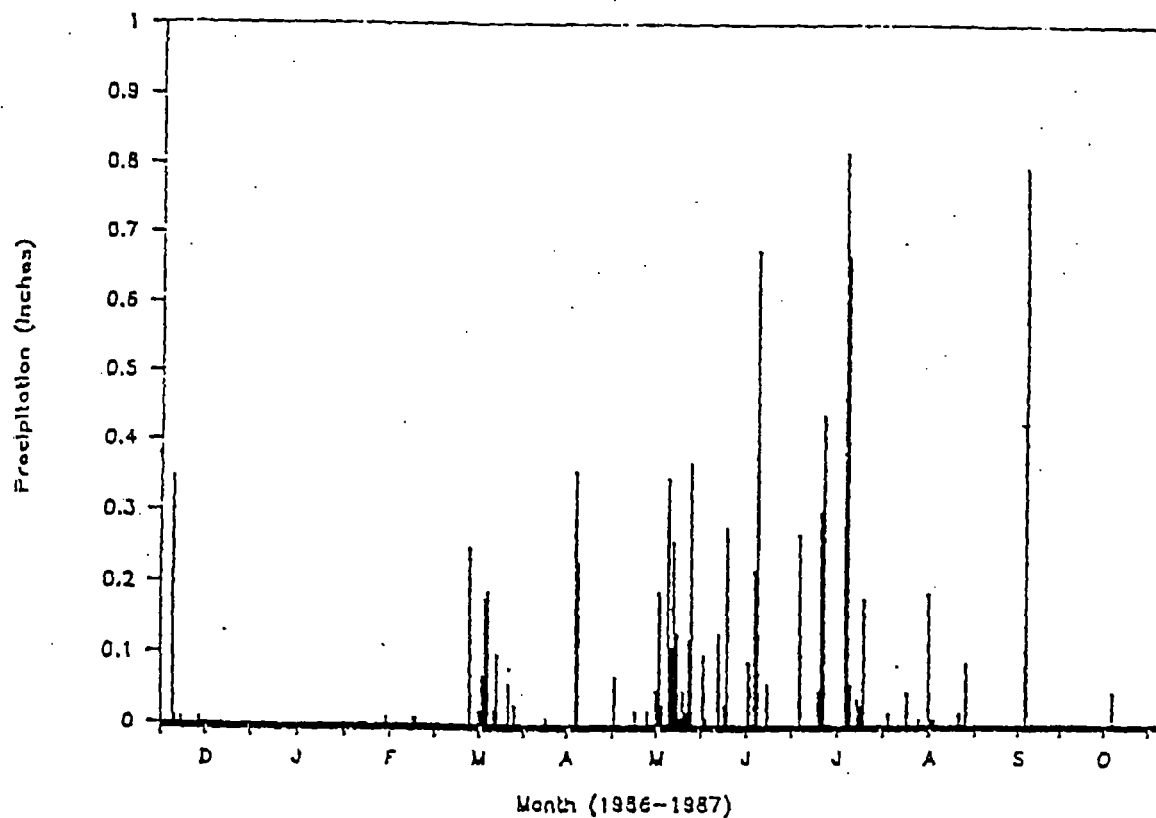
EP toxicity tests (see Appendix 4-1-2) indicate that leachable trace element concentrations from the slag are variable. From 18 tests, the results for arsenic varied from below detection level to 1.2 ppm with an average of 0.16 ppm; cadmium varied from below detection level to



TABLE 4-1-10. PRECIPITATION COLLECTED IN SLAG TEST BASINS

<b>FUMED SLAG</b>			
Date	Precipitation (inches)	Precipitation Retained *	Percent of Precipitation Retained
12/23/86			
1/22/86	0		
2/23/87	0		
3/26/87	0.75	0.01	1.4
4/21/87	0.23	-0.01	-5.8
5/18/87	0.51	0.32	61.9
6/18/87	2.46	0.49	19.8
7/14/87	0.88	0.25	28.7
8/11/87	1.70	0.36	21.2
9/11/87	0.37	not calculated	
10/14/87	0.65	0.25	38.4
12/7/87	0.45	-0.02	-3.9
1/20/88	0.34	-0.02	-6.7
2/10/88	0.49	-0.01	-1.1
<b>UNFUMED SLAG</b>			
12/23/86			
1/22/87	0		
2/23/87	0		
3/26/87	0.75	0	
4/21/87	0.23	0.12	52.7
5/18/87	0.51	0.27	53.6
6/18/87	2.46	0.73	29.8
7/14/87	0.88	0.28	31.7
8/11/87	1.70	0.12	7.2
9/11/87	0.37	not calculated	
10/14/87	0.65	0.40	61.8
12/7/87	0.45	-0.05	-12.1
1/20/88	0.34	-0.15	-45.0
2/10/88	0.49	0.14	27.6

\* Value is calculated based on measured water level changes and test basin geometry (Frustum of a general pyramid). Negative values indicate evaporation exceeds infiltration.

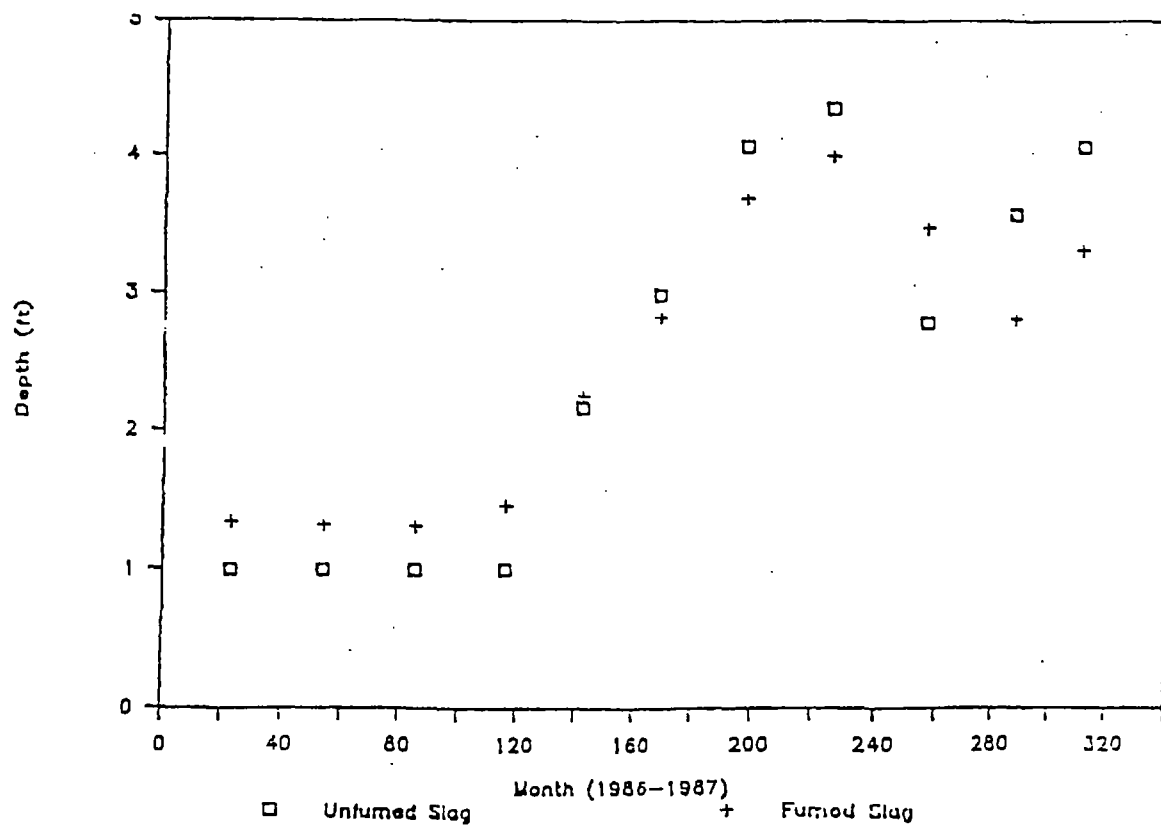


CC/RA REPORT  
ASARCO EAST HELENA  
FACILITY

DAILY PRECIPITATION  
AT HELENA AIRPORT

FIGURE

4-1-9



CC/RA REPORT  
ASARCO EAST HELENA  
FACILITY

DEPTH OF WATER IN  
SLAG TEST BASIN

FIGURE

4-1-10

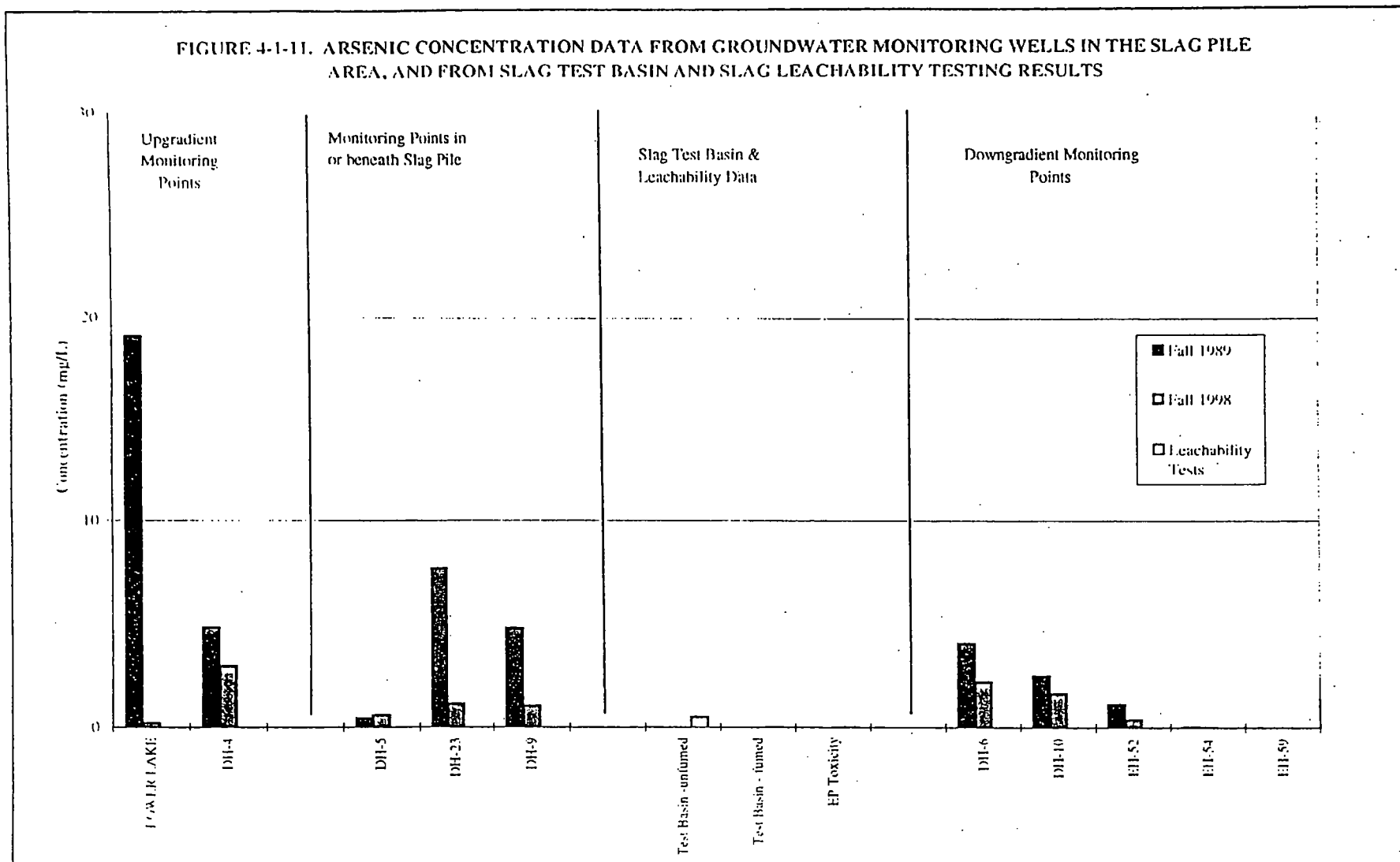
3.9 ppm, with an average of 0.26 ppm (only one cadmium value was greater than 0.25 ppm; if the 3.9 ppm value is dropped, the cadmium average concentration is 0.04 ppm); lead values varied from below detection level to 30 ppm, with an average of 5.2 ppm.

The EP Toxicity tests were not conducted as part of the Comprehensive RI/FS activities, but have been included as supplementary data. The EP Toxicity results tend to overpredict the mobility of metals compared to the other test results and observed site conditions due to the low pH of the extractant. In particular, the values for lead appear to be much higher with TCLP than with natural conditions.

Concentrations of arsenic and other metals in the groundwater system are discussed in detail in Section 4.4. In general, results of water quality from the slag basins and bottle roll analyses of slag indicate arsenic concentrations are significantly lower than concentrations observed in monitoring wells both upgradient and downgradient of the slag pile. Figures 4-1-11, 4-1-12, 4-1-13 and 4-1-14 show a comparison to slag test basin water quality, bottle roll test water quality, EP Tox test results, and groundwater quality upgradient and down gradient of the slag pile.

Based on observed recharge rates in the slag test basins and associated water quality data, the slag pile would account for only 1 to 3 percent of the observed arsenic at downgradient monitoring well DH-10 (see Figure 4-1-15). Concentrations of arsenic in these wells are similar to arsenic concentrations in DH-4 near Lower Lake, the apparent source of elevated arsenic in these wells. Based on the results of test basin water quality analyses and bottle roll tests, it is unlikely that slag significantly effects observed arsenic concentration trends on the site.

While EP-Toxicity results indicate that there is some potential for mobility of cadmium, lead and zinc from slag, the results of the test basins and bottle roll tests indicate metals concentrations released from slag is low. In addition, concentrations of cadmium, lead and





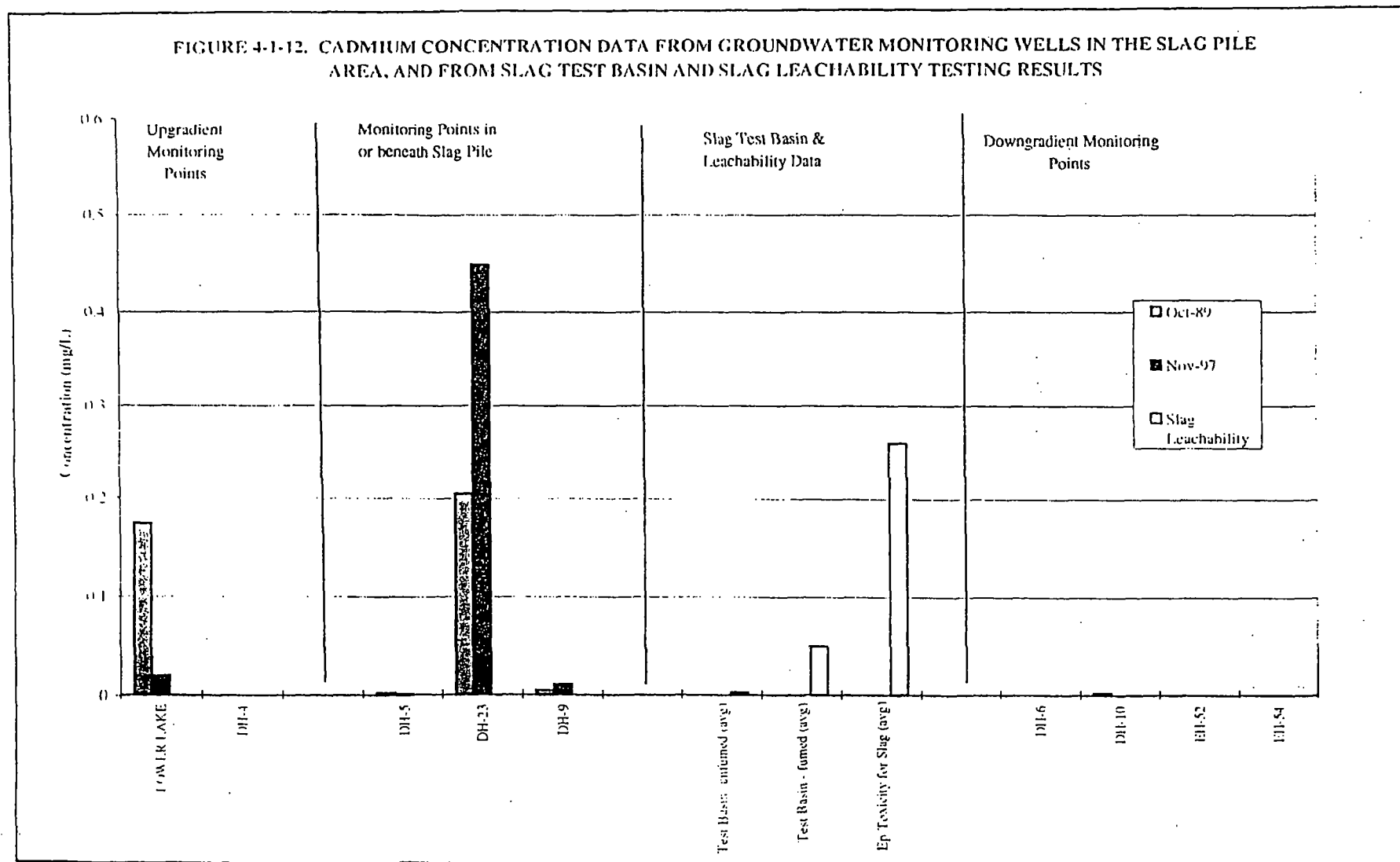


FIGURE 4-1-13. LEAD CONCENTRATION DATA FROM GROUNDWATER MONITORING WELLS IN THE SLAG PILE AREA, AND FROM SLAG TEST BASIN AND SLAG LEACHABILITY TESTING RESULTS

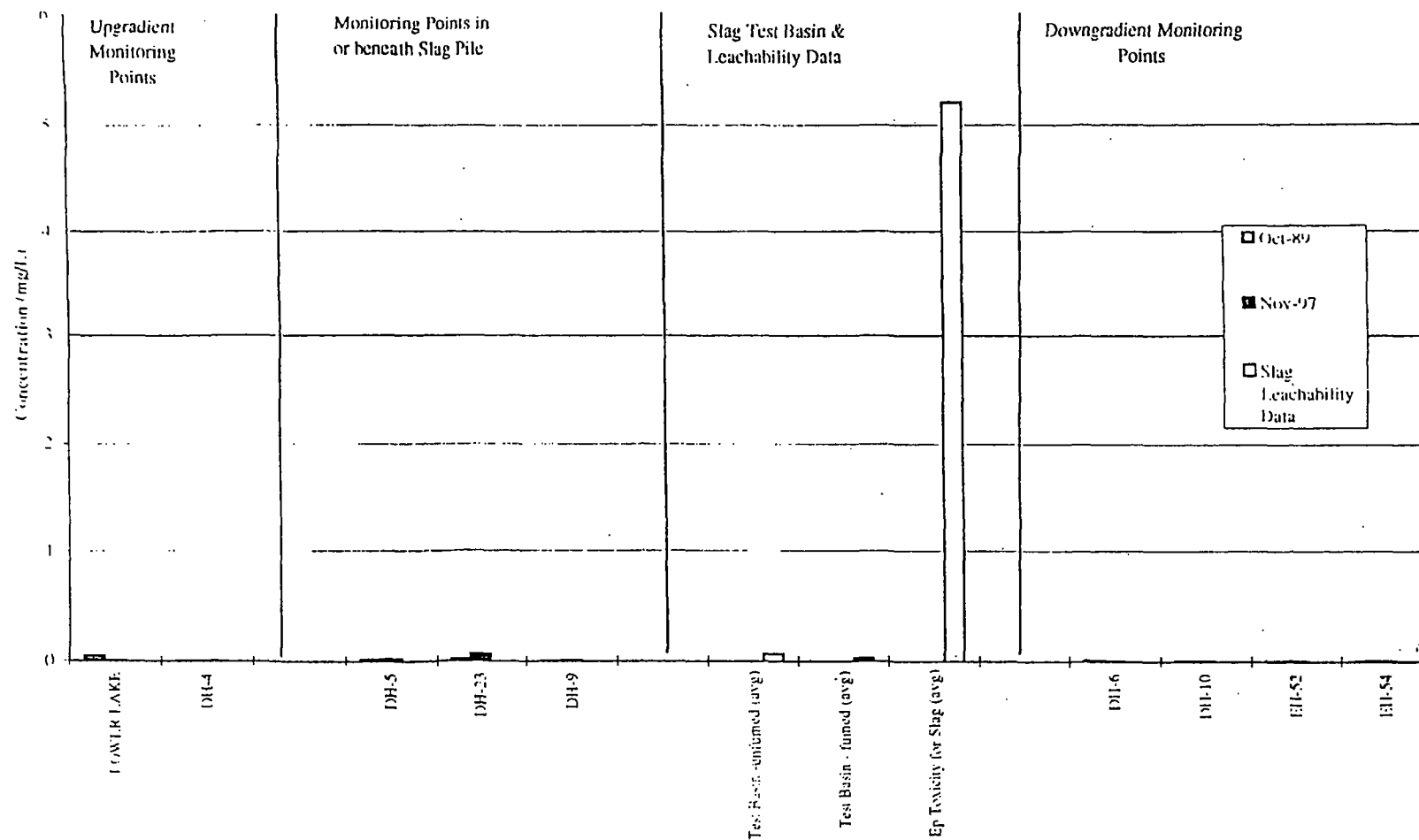
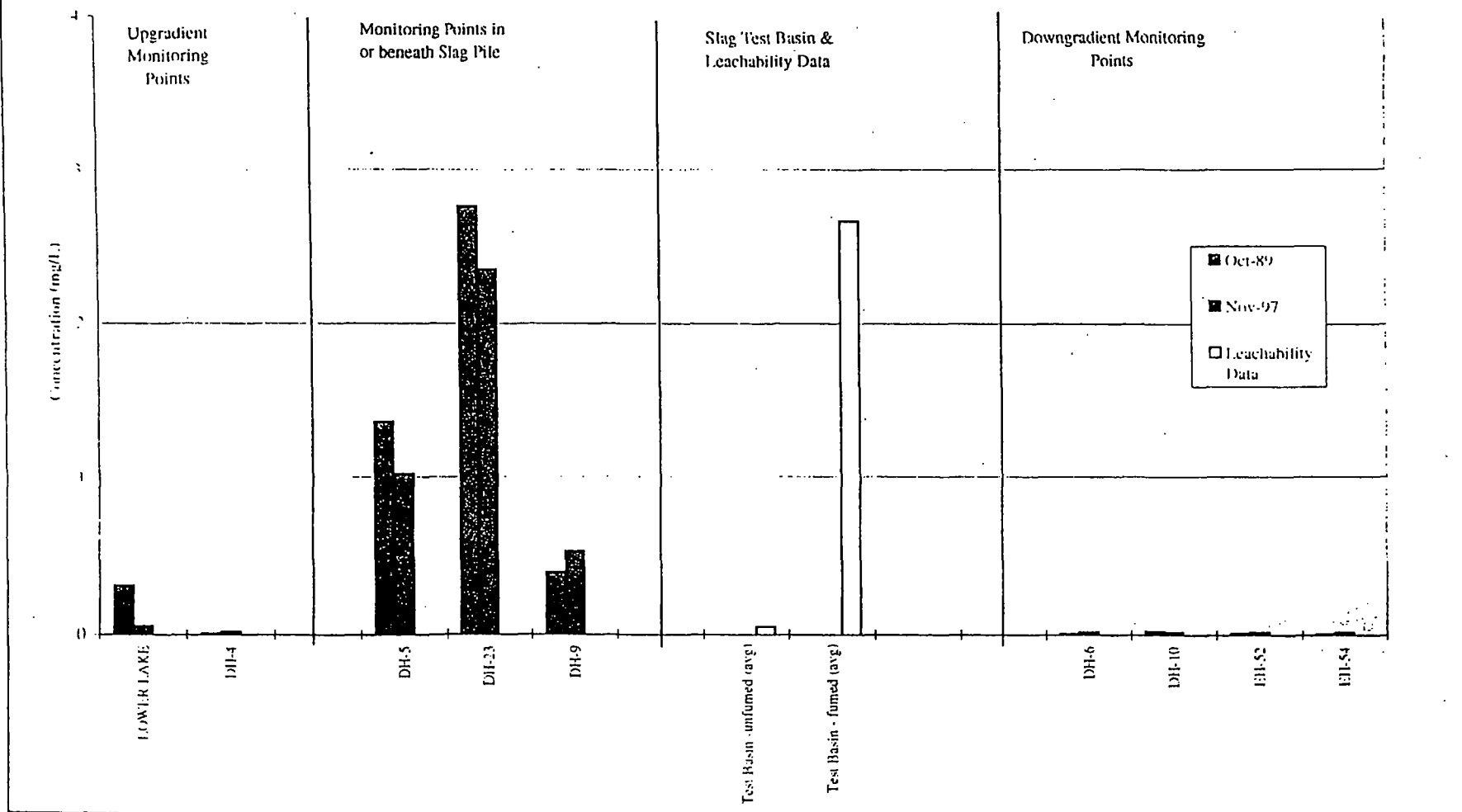


FIGURE 4-1-14. ZINC CONCENTRATION DATA FROM GROUNDWATER MONITORING WELLS IN THE SLAG PILE AREA.  
AND FROM SLAG TEST BASIN AND SLAG LEACHABILITY TESTING RESULTS



**FIGURE 4-1-15. CALCULATED ARSENIC LOADING FROM SLAG VS  
ARSENIC LOAD IN DOWN-GRADIENT GROUNDWATER**

Data Source	Arsenic Conc.(1)	Arsenic Load (2)	% of GW Load (3)
<b>Test Basin Data</b>			
Fumed Slag	0.036 mg/L	0.003 lb/day	0.20%
Unfumed Slag	0.53 mg/L	0.044 lb/day	2.40%
Average	0.28 mg/L	0.022 lb/day	1.30%
Max	0.59 mg/L	0.047 lb/day	2.60%
EP toxicity (avg. of 18 tests)	0.16 mg/L	0.013 lb/day	0.70%
Groundwater Load	2.13 mg/L (4)	1.8 lb/day (4)	

**Notes**

(1) Source RI/FS Appendix 6-1

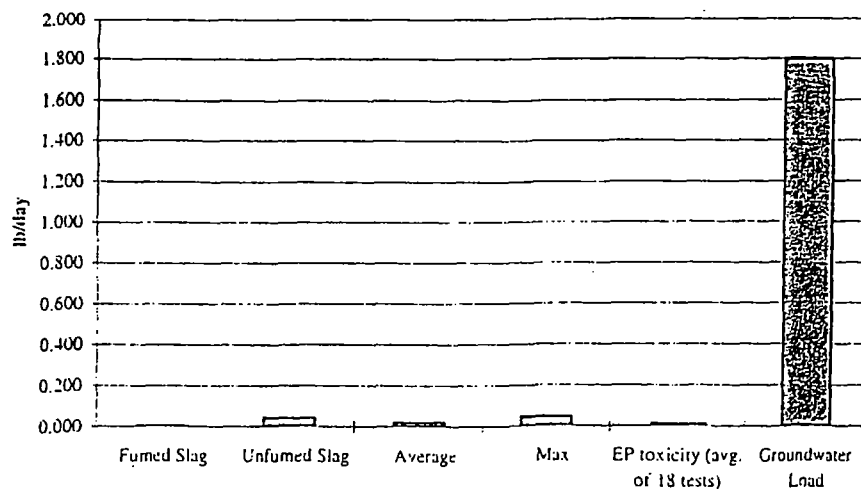
(2) Slag load calculations assume:  
20% infiltration (slag test basin average)  
11.3 in/yr ppt  
57 acre slag pile area

(3) Calculations based on 1.8 lb/day GW arsenic load assuming:  
east side groundwater flux of 70 gpm  
east side groundwater arsenic concentration of 2.13 mg/L

(4) Groundwater Load assumptions  
Groundwater As Concentration 2.13 mg/L (avg from DH-10)  
Groundwater flux = 70 gpm

(K:\DATA\PROJECT\0867\WQ.XLS)

**Arsenic Load**



zinc is also very low. Based on the results of test basin water quality analyses, bottle roll tests, and down gradient groundwater quality, it is unlikely that slag effects observed groundwater quality trends on the site.

Stratigraphic cross-sections showing the slag pile and underlying stratigraphy (Figure 4-1-16) shows the relationship of the slag pile and underlying strata, including the perched alluvial horizon and the underlying coarser grained alluvial aquifer. Based on monitoring well stratigraphy, it is likely the perched horizon at least partially underlies the slag pile. However, there is no evidence of the perched horizon in downgradient wells (see DH-6 and DH-10). As a result, direct impacts from the slag pile at these wells is unlikely since the perched horizon is absent, and the wells are completed in the coarse grained alluvium. However, as noted above, test basin and laboratory test results indicate potential water quality impacts from the slag are low and are not responsible for the water quality concentration observed in downgradient wells.

#### **4.1.4.2 Potential Surface Water Impacts**

The potential for runoff transport in the slag pile area is very low due to the coarse, granular nature of the slag pile, which allows extremely rapid infiltration. Even during high precipitation events no runoff has been observed from the slag pile. Similarly seeps from the face of the slag pile have not been observed. The potential for impacts to surface water are, therefore, limited to direct contact and erosion of the slag pile where it forms steep sided banks adjacent to Prickly Pear Creek. Prickly Pear Creek is in immediate contact with the slag pile between PPC-5 and PPC-6, and adjacent to the slag pile from PPC-6 to PPC-7 (see Exhibit 3-2-1).

The 1990 Comprehensive RI/FS (Hydrometrics, 1990a) examined water quality data from Prickly Pear Creek to assess the potential impact of the slag pile on the creek. No consistent concentration or load increases were apparent in Prickly Pear Creek adjacent to the slag pile (between PPC-5 and PPC-7). The RI/FS therefore concluded that the contribution of arsenic and metals to surface water from slag is very minor. RI/FS and Post RI/FS water quality data



for Prickly Pear Creek are presented and discussed in Section 4.3 of this report and post-RI/FS water quality data are generally consistent with the RI/FS findings. Average metal concentrations show only small differences between stations PPC 5, PPC 7 and PPC 8 (see Figure 4-1-17). Only one high flow stream event (May 1994) shows a pronounced increase in total arsenic load between PPC-5 and PPC-7 (see Figure 4-3-9 in Section 4.3); however, arsenic concentrations decreased from PPC-5 to PPC-7 in the May 1994 event. The calculated load increase is therefore entirely a function of the flow measurement. Since the accuracy of the flow measurements is poor during higher flow events due to increased velocities and turbulence (particularly at PPC-5 below the dam) the apparent load increase during May 1994 is probably the result of flow measurement error. The conclusion of the surface water analysis is that there is little evidence for transport of arsenic and metals from the slag pile with the possible exception being direct erosion of the slag during infrequent high stream flow events.

#### **4.24.2 PROCESS FLUIDS**

As part of the Comprehensive RI/FS (Hydrometrics 1990a), the Process Fluids Operable Unit was divided into two sub-units: Process Ponds and Process Fluid Transport Circuits.

##### **4.1.14.2.1 Process Ponds**

The Process Ponds include:

- Lower Lake,
- Former Thornock Lake, and
- The acid plant water treatment facility.

As described in Sections 1 and 3, the Process Ponds were addressed by the Process Ponds RI/FS (Hydrometrics, 1989), a subsequent Process Ponds ROD (US EPA, 1989), and several RD/RA documents, and remedial actions that consisted primarily of sediment excavation. The 1989 Process Pond RI consisted of:

## ASARCO TECHNICAL SERVICES CENTER

## ANALYTICAL DATA REPORT

East Helena

Technical Services (Project 3101)

Batch No: L010790

LAB NO	DATE COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	HOLD DAYS	METHOD
L010790-002	21-MAY-01	FUMED ASARCO SLAG	AG	0.003	μ	MJF	18-JUN-01		ICP
			AL	2.32	μ	MJF	18-JUN-01		ICP
			AS	0.022	μ	MJF	18-JUN-01		ICP
			BA	0.34	μ	MJF	18-JUN-01		ICP
			BE	<0.02	μ	MJF	18-JUN-01		ICP
			CR	0.036	μ	MJF	18-JUN-01		ICP
			CU	0.32	μ	MJF	18-JUN-01		ICP
			HG	2.7	ppm	MO	21-JUN-01		COLD VAPOR AA
			MN	1.37	μ	MJF	18-JUN-01		ICP
			NI	<0.02	μ	MJF	18-JUN-01		ICP
			PB	0.036	μ	MJF	18-JUN-01		ICP
			SD	0.026	μ	MJF	18-JUN-01		ICP
			SE	<0.02	μ	MJF	18-JUN-01		ICP
			TL	<0.02	μ	MJF	18-JUN-01		ICP
			V	<0.02	μ	MJF	18-JUN-01		ICP
			ZN	1.63	μ	MJF	18-JUN-01		ICP

## ASARCO TECHNICAL SERVICES CENTER

## ANALYTICAL DATA REPORT

East Helena

Technical Services (Project 3101)

Batch No: L010791

LAB NO	DATE COLLECTED	DESCRIPTION	PARAMETER	VALUE	UNITS	ANALYST	DATE ANALYZED	HOLD DAYS	METHOD
L010791-002	23-MAY-01	FUMED ASARCO SLAG (TCLP)	AG	<0.050	ppm	ESH	08-JUN-01	6010	
			AS	<0.10	ppm	ESH	08-JUN-01	6010	
			BA	1.4	ppm	ESH	08-JUN-01	6010	
			BE	<0.005	ppm	ESH	08-JUN-01	6010	
			CD	<0.050	ppm	ESH	08-JUN-01	6010	
			CR	<0.10	ppm	ESH	08-JUN-01	6010	
			HG	<0.50	ppb	MO	07-JUN-01	7470	
			NI	<0.10	ppm	ESH	08-JUN-01	6010	
			PB	0.23	ppm	ESH	08-JUN-01	6010	
			PH	9.2	pH	MO	05-JUN-01	150.1	
			SE	<0.10	ppm	ESH	08-JUN-01	6010	
			TL	<0.10	ppm	ESH	08-JUN-01	6010	
			V	<0.10	ppm	ESH	08-JUN-01	6010	
			ZN	17	ppm	ESH	08-JUN-01	6010	

Approved

Reviewer

**2008 CLEANING AND DEMOLITION PROJECT  
ASARCO EAST HELENA PLANT**

**2008 WORK PLAN**

**APPENDIX C**

**March 2008**

**EXAMPLE INSPECTION FORM**

## INTERIM CAP INSPECTION CHECKLIST

AREA INSPECTED	Area No.		Inspected by:	DATE:		
	ITEM NO.	CONDITION	OBSERVATION	ACTION NEEDED		
				MONITOR	INVESTIGATE	REPAIR
INTERIM LINER SYSTEMS	1	Exposed liner				
	2	Sand Bags				
	3	Liner Seams				
	4	Liner/Concrete Attachments				
	5	Site Drainage				
Additional Comments:						



**ATTACHMENT C**

**IRS ENVIRONMENTAL  
HAZARDOUS MATERIALS ABATEMENT PLAN**

**HAZARDOUS MATERIALS ABATEMENT PLAN**

**ASBESTOS CONTAINING MATERIALS AND LEAD DUST CLEANING  
ASSOCIATED WITH THE  
ASARCO PHASE 4 BUILDING CLEANING AND DEMOLITION**

**Submitted to:**

**Cleveland Wrecking Company  
628 E. Edna Pl.  
Covina, California 91723**

**Prepared by:**

**Darin Dietz  
IRS Environmental of WA, Inc.  
12415 E. Trent  
Spokane WA. 99216**

**April 16, 2007**

## **Table of Contents**

---

1.0	Introduction	1-1
2.0	Asbestos Abatement - Applicable Standards and Guidelines	2-1
3.0	Site Supervision and Certifications	3-1
4.0	Site Safety and Health Plan	4-1
4.1	General	4-1
4.2	Work Site Safety	4-1
4.2.1	Work Area Access	4-1
4.2.2	Hazard Briefing	4-1
4.2.3	Entry Log	4-2
4.2.4	Entry Requirements	4-2
4.3	Worker Protection Requirements	4-2
4.3.1	General	4-2
4.3.2	Asbestos Abatement Training	4-2
4.3.3	Lead Dust Removal Training	4-3
4.3.3	Respiratory Protection	4-4
4.3.4	Other Personal Protective Equipment	4-5
4.3.5	Medical Monitoring	4-6
4.3.6	Medical Monitoring – Lead Abatement	4-6
4.4	Emergency Contingency Plan	4-7
4.4.1	General	4-7
4.4.2	Emergency Procedures	4-7
4.4.3	Lead Dust Removal Training	4-8
4.4.4	Safety Signals	4-8
4.4.5	Medical Emergency	4-8
4.4.4.1	General	4-8
4.4.4.2	Chemical Inhalation	4-9
4.4.4.3	Eye Contact	4-9
4.4.4.4	Skin Contact	4-9
4.4.4.5	Personal Injury Accident	4-10
4.4.4.6	Fire	4-10
4.5	Failure of Work Area Containment System	4-10
4.6	Emergency Information	4-10
4.6.1	Key Project Personnel	4-11
4.6.2	Medical Care Facilities	4-11
4.6.3	Emergency Telephone Numbers	4-11
5.0	Asbestos and Lead Dust Removal Techniques and Procedures	5-1
5.1	Notifications	5-1
5.2	Work Area Preparation	5-1
5.2.1	Warning Signs	5-1
5.2.2	Electrical Power	5-1
5.2.3	Establishing Asbestos Removal Work Areas	5-2
5.2.4	Establishing Lead Removal Work Area	5-2
5.2.5	Establishing Lead Dust Removal Work Areas	5-3
5.3	Workplace Entry and Exit Procedures	5-3

5.4	Personal Protective Equipment	5-4
5.4.1	Respiratory Protection	5-5
5.4.2	Whole Body Protection	5-5
5.5	Asbestos Removal Techniques and Procedures	5-6
5.5.1.	Removal of ACM Thermal System Insulation and Mudded Joint Packings (Fittings)	5-6
5.5.2	Removal of Transite Shingles and Boards	5-7
5.5.3	Removal of all other Class II materials	5-7
5.5.4	Final Inspection of Work Areas	5-7
5.6	Removal of Lead Dust from Buildings	5-8
5.6.1	Vacuuming Lead dust in Building	5-8
6.0	Waste Handling and Disposal	6-1
6.1	Packaging and Storage of Friable Waste and Removal from the Work Area	6-1
6.2	Packaging and Storage of Nonfriable Waste and Removal from the Work Area	6-1
6.3	Transportation and Disposal	6-1
7.0	Air Monitoring and Clearance Sampling	7-1
7.1	Personal Air Monitoring – Asbestos	7-1
7.2	Pre-abatement, Area and Perimeter Sampling – Asbestos	7-2
7.3	Final Cleaning, Clearance Sampling Methodology and Analysis – Asbestos	7-3
7.4	Personnel Air Monitoring – Lead	7-3
7.5	Area and Perimeter Sampling – Lead	7-3
8.0	Laboratory Analysis of Personal Air Samples	8-1

## Appendices

A	Supervisor Qualifications
B	Site Specific Hazard Analysis
C	ACM Removal Procedures
D	Fall Protection Plan
E	Permits/Notifications
J	Material and Equipment Data
K	Air Monitoring Plan/Sample Results
L	Respirator Protection Program/Medical Clearance Documentation
N	Drawings/Site Layout
O	Laboratory Certifications
P	Material Safety Data Sheet

## **1.0 Introduction**

---

- 1) IRS Environmental of WA (IRSE) has been contracted by Cleveland Wrecking Company, to abate hazards associated with the asbestos-containing materials (ACMs) that were identified in the structures and lead dust cleaning before selective demolition of the Asarco Lead Smelter Plant, located in East Helena, Montana.
- 2) This work plan describes the methods and procedures IRSE shall utilize to remove the subject ACM and lead dust. Sections 2.0 through 7.0 describe the applicable standards and regulations, site supervision, removal procedures and waste handling, WISHA air monitoring and the laboratory analytical procedures for each building scheduled for ACM abatement and/or lead dust cleaning. Appendix A of this work plan identifies the specific scope of work for each building scheduled for asbestos abatement and/or lead dust cleaning.
- 3) This plan is intended to address removal of ACM and lead dust cleaning from the subject structures.



## **2.0 Asbestos Abatement and Lead Dust Cleaning- Applicable Standards and Guidelines**

---

- 1) Asbestos abatement work under this contract will be performed in accordance with all federal, state, and local laws, regulations, standards, and codes governing asbestos abatement. Before starting work, IRSE will provide proper notification Montana Department of Environmental Quality (DEQ).
- 3) IRSE will comply with all provisions of the Montana Asbestos Work Practices and Procedures Manual adopted and incorporated by the reference in the administrative Rules of Montana, Title 17, Chapter 74 Subchapter 3 as it pertains to safety in employment and the applicable provisions of DEQ General Safety and Health Standards as it pertains to occupational safety and health in the workplace. In addition, IRSE will comply with Title 29 CFR 1910 and 1926. The most recent edition of any regulation, standards, document, or code will be in effect. When conflict among the requirements or with this work plan exists, the more stringent requirement(s) will be applied.

In addition, IRSE will comply with all provisions of the Federal OSHA standards applicable to construction work where employees may be exposed to lead (Title 29 CFR 1910 and 1926.62). The most recent edition of any regulation, standards, document, or code will be in effect. When conflict among these requirements or with this work plan exists, the more stringent requirement(s) will be applied.

- 4) Initial exposure assessments will also be conducted at the beginning of all abatement activities in accordance with Title 29 CFR 1926.1101.

### **3.0 Site Supervision and Certification**

- 1) IRSE is a licensed asbestos abatement contractor in the State of Montana. All work will be supervised by Mark Kazemba, a state-certified Asbestos Supervisor and has completed the 40 hour hazwoper training. All supervisors are AHERA trained competent persons.
- 2) Supervisory duties will include, but will not be limited to, controlling site access and implementing proper air sampling protocols, as well as appropriate controls to prevent exposure to ACMs and lead. It is also the competent person's responsibility to ensure adequacy of engineering controls and to exercise the authority to select appropriate control strategies up to and including shutdown of the work if conditions are warranted.
- 3) All workers conducting ACM removal activities will be medically qualified and trained for asbestos work involving respirator usage.
- 4) All workers conducting lead dust cleaning will be medically qualified and trained for lead removal work involving respirator usage.

## **4.0 Site Safety and Health Plan**

### **4.1 General**

- 1) IRSE will be responsible for safety and health at the Asarco Phase 4 Building Cleaning and Demolition Project during anticipated asbestos abatement and lead cleaning activities. This includes, but is not limited to, electrical safety, equipment operation safety, mechanical (tool) safety, fire safety, and personnel protective equipment safety.
- 2) The *IRSE Site Specific Hazard Analysis* plan for the Asarco Phase 4 Building Cleaning and Demolition Project (see Appendix D) was developed to be used in conjunction with this Asbestos and Lead Dust Abatement Work Plan. Information found in this Work Plan, including air sampling, decontamination procedures, and work activities should be used to supplement the information contained in the *IRSE Site Specific Hazard Analysis Plan for the Asarco Phase 4 Building Cleaning and Demolition Project*. (see Appendix D).

### **4.2 Work Site Safety**

- 1) Before initiating asbestos or lead cleaning abatement work, IRSE will set and post emergency procedures in a conspicuous place at each active abatement site. The emergency procedures will include provisions for the following:
  - Evacuation of injured workers
  - Emergency and fire egress routes from all work areas, including local telephone numbers for fire and medical emergency personnel, site of hospital routing maps
  - Copies of applicable insurance certificates
  - Entry logs.
- 2) At a minimum, two IRSE personnel with the proper training and certified in basic first aid and cardiopulmonary resuscitation (FA/CPR) will be at each active work site. A general first aid kit will be maintained in the support area for treating minor medical problems.

#### **4.2.1 Work Area Access**

Removal work areas will be clearly marked with barrier tape or other means to warn personnel of the hazards. Immediately adjacent to the removal work area (regulated work areas) a decontamination area for equipment and personnel will be established. The remainder of the IRSE project area will be designated as the support zone. No special markings or warning labels are required for this area.

#### **4.2.2 Hazard Briefing/Site Safety Operation**

- 1) No person will be allowed on the site during active abatement activities without first being given a site hazard briefing. In general, the briefing will consist of a review of the Work Plan and the tailgate safety meeting. All persons on the site, including visitors, must sign the site-specific tailgate safety meeting form. Tailgate safety meetings shall be held prior to the start of any work activities involving all personnel on site.

#### **4.2.3 Entry Log**

- 1) The IRSE Competent Person shall record the names and times of entry and exit of all personnel who enter the asbestos removal and lead dust cleaning work areas (regulated work area).

#### **4.2.4 Entry Requirements**

- 1) Entry into regulated work areas shall be only by personnel authorized by the State Certified Supervisor, Competent Persons, and Personnel authorized to enter regulated work areas shall be trained and medically evaluated and shall wear the PPE required.
- 2) IRSE will be responsible for the security of the work areas of the building(s) involved in the abatement project and secure all assigned entrances and exits at the end of the work day so as to prevent unauthorized entry.
- 3) The tailgate safety meeting log will be maintained and reflect the name of any and personnel attending.

### **4.3 Worker Protection Requirements**

#### **4.3.1 General**

- 1) Danger signs and tape will be posted and meet the specifications of DEQ and OSHA Construction Standards wherever regulated work areas are created. Signs will be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure.
- 2) Electrical power systems located in active abatement areas are de-energized, shut down and locked out and temporary power and lighting sources (if applies) will be provided to the area. The temporary power will be installed in a manner that is consistent with all applicable electrical code, WISHA, OSHA, and IT requirements for temporary electrical systems (if applies).
- 3) A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2 through 79 (local exhaust ventilation requirements) shall be utilized when needed to provide adequate ventilation, or to provide four air changes per hour inside negative pressure enclosures.

#### **4.3.2 Asbestos Abatement Training**

- 1) Training shall be provided to all employees or agents who may be required to disturb asbestos for abatement and auxiliary purposes and to supervisory personnel who may be involved in planning, execution, design, or inspection of abatement projects. Asbestos abatement workers and supervisors must have successfully completed Washington State approved training courses and have state certification cards on site at all times when working.

Inspection undertaken to determine the presence of additional asbestos will be conducted by MCS Environmental, who are currently EPA Certified Building Inspectors. Project design personnel will also be EPA certified. Worker and supervisory certificates and training documentation are located in Appendix B.

2) Worker training shall provide, at a minimum, information on the following topics:

- The health hazards of asbestos, including the nature of various asbestos-related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods for disease and health basis for standards.
- The physical characteristics of asbestos, including fiber size, aerodynamic properties, physical appearance, and uses.
- Employee PPE, including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage of respirators, field testing the face-piece-to-face seal (positive and negative pressure fitting tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit (e.g., facial hair), selection and use of disposable clothing, use and handling of launderable clothing, nonskid shoes, gloves, eye protection, and hard hats.
- Medical monitoring requirements for workers include required and recommended tests, reasons for medical monitoring, and employee access to records.
- Air monitoring procedures and requirements for workers, including description of equipment and procedures, reasons for monitoring, types of samples, and current standards with recommended changes.
- Work practices for asbestos abatement include proper construction and maintenance of air-tight plastic barriers, job set-up of airlocks, worker decontamination systems and waste transfer airlocks, posting of warning signs, engineering controls, electrical and ventilation system lockout, proper working techniques, waste cleanup and disposal procedures.
- Personal hygiene, including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing in the work area.
- Special safety hazards that may be encountered, including electrical hazards, air contaminants (CO2 wetting agents, encapsulant, and materials from Owner's operation), fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress, and noise.
- Workshops affording both supervisory personnel and abatement workers the opportunity to see (and experience) the construction of containment barriers and decontamination facilities.



- Supervisory personnel shall, in addition, receive training on contract specifications, liability insurance and bonding, legal considerations related to abatement

establishing respiratory protection medical surveillance programs, EPA, OSHA, and State record-keeping requirements.

- 3) *Training must be provided by Washington State approved training providers and must be current, each employee having training certification renewed every 12 months as required by regulation.*

#### **4.3.3 Lead Dust Removal Training**

- 1) Training shall be provided to all employees or agents who may be required to disturb Lead Dust, and to supervisory personnel who may be involved in planning, execution, design, or inspection of Lead Dust removal projects.

Lead Dust removal supervisors will have successfully completed the Lead in Construction Training Course and will hold current certification. Lead removal workers will have completed Four Hour Lead Awareness Training for Lead in Construction as required by WISHA and OSHA.

- 2) Worker training shall provide, at a minimum, information on the following topics:
  - The Content Lead and Title 29 CFR 1910 and 1926.62
  - The specific nature of operations which could result in exposures to lead above the *action level*
  - Training requirements for respirators as required by 296-62 WAC, Part E and 29 CFR 1926.103
  - The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).
  - The engineering controls and work practices associated with the employees job assignment including training of employees to follow relevant good work practices described in Appendix B, WAC 296-155-17652 and 29 CFR 1926
  - Instructions that chelating agents should not routinely be used to remove lead from the body and should not be used at all except under the direction of a licensed physician
  - The employees right of access to records under Part B, chapter 289-62 WAC and 296-800 WAC

#### **4.3.4 Respiratory Protection**

- 1) Each worker involved in abatement shall be instructed in the proper use of respirators.
- 2) A sufficient quantity of respirator filters approved for asbestos and lead work will be available. Respirators and unused filters, if applicable, will be stored at the job site in the changing room to protect them completely. The filters used will be high efficiency particulate air (HEPA).
- 3) Workers must perform a field fit test/inspection of their respirator as specified by the manufacturer.
- 4) No one wearing a beard shall be permitted to don a respirator and enter the work area.
- 5) Additional respirators and training on their donning and use must be available at the work site for authorized visitors who may request to enter the work area.

#### **4.3.4 Other Personal Protective Equipment**

- 1) Personal protective equipment that includes Tyvek or polypropylene coveralls with hoods, hard hats, respirators, and nitrile gloves will be provided in sufficient quantities and adequate sizes for all workers and authorized visitors.
- 2) Protective eyewear and hard hats shall be provided as required for workers and authorized visitors for use outside of the containment area.

#### **4.3.5 Medical Monitoring –Asbestos Abatement**

- 1) Medical monitoring must be provided to any employee that may be exposed to asbestos in excess of background levels during any phase of these abatement projects. The purposes of a medical monitoring program are to determine work relatedness of disease, as well as to ensure fitness for duty, particularly the ability to wear a respirator. The medical monitoring program provides the appropriate setting to share this information. Medical monitoring shall include, at a minimum, the requirements of 29 CFR 1926 and IRSE Medical Compliance Plan.
  - A work/medical history to elicit symptomatology of respiratory disease.
  - A chest x-ray (posterior-anterior, 14 x 13 in.) taken by a certified radiologist technician and evaluated by a certified B-reader.
  - A pulmonary function test, including forced vital capacity (FVC) and forced expiratory volume at one second (FEV1), and FEV1/FVC ration (administered by a NIOSH or American Thoracic Society (ATS) Certified Pulmonary Technician) and interpreted and compared to standardized normalcy by a Board Certified Pulmonary Specialist.

- Employees shall be given the opportunity to be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. Examining physicians shall be aware of the nature of respiratory protective devices and their contributions to breathing resistance. They shall also be informed of the specific types of respirators the employees shall be required to wear and the work they will be required to perform, as well as special workplace conditions, such as high temperatures, high humidity, and chemical contaminants to which employees may be exposed.
- Evaluation of groups of workers should take into consideration epidemiologic principles as suggested by the ATS in its statement on the work relatedness of disease adopted in 1982.

#### **4.3.6 Medical Monitoring – Lead Abatement**

- 1) Medical monitoring will be provided to any employee that may be exposed to airborne lead in excess of the action level of  $30 \mu\text{g}^3$  during any phase of the Lead dust cleaning process. The purposes of a medical monitoring program is to provide baseline blood lead levels and to provide ongoing biological monitoring to insure engineering controls are effective, as well as to ensure fitness for duty, particularly the ability to wear a respirator. The medical monitoring program provides the appropriate setting to share this information.

Medical monitoring shall include, at a minimum, the requirements of 29 CFR 1926.62 and WAC 296-155-17629:

- An accurate record for each employee including Name, Social Security Number, and a description of the duties of each employee.
- A copy of the physician's written opinions, including those related to fitness for respirator use
- Results of any airborne exposure monitoring done on or for that employee and provided to the Physician
- Each employee shall be given the opportunity to be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. Examining physicians shall be aware of the nature of respiratory protective devices and their contributions to breathing resistance. They shall also be informed of the specific types of respirators the employees shall be required to wear and the work they will be required to perform
- Any employee medical complaints related to exposure to lead
- A copy medical examination results and description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information (to be retained by doctor).
- A copy of the results of biological monitoring.

#### **4.4 Emergency Contingency Plan**

- 1) Site personnel must be prepared to respond and act quickly in the event of an emergency. The following emergency preparedness and response procedures will aid in protecting site workers and the surrounding environment.

##### **4.4.1 General**

- 1) The Site Safety Officer will establish evacuation routes and assembly areas for the abatement site. All personnel entering the work area will be informed of these routes and assembly areas. Evacuation routes, rally points, and the locations of emergency equipment will be included on the site map contained within the work plan prior to the initiation of on-site activities.
- 2) In the case of site evacuation, the following procedures shall be observed:
  - Stop working, secure equipment, and return to the decontamination area for decontamination
  - Exit building
  - Walk to the designated rally point using the evacuation route
  - Notify the on-site IRSE Competent Person, Project Manager and the Environmental Health and Safety representative
  - Remain at the rally point until further information is received
- 3) Personnel should not stand in roads, driveways, or in front of gates, as these locations may be used by emergency and support vehicles entering the site.
- 4) Each site activity will be evaluated for the potential for fire, explosion, chemical release, or other catastrophic events. Unusual events, activities, chemicals, and conditions will be immediately reported to the Competent Person.

##### **4.4.2 Emergency Procedures**

- 1) If an incident (personal or vehicle accident, property damage, or near miss) occurs, the following procedures will be used:
  - The Competent Person will evaluate the incident, assess the need for assistance, and notify the Project Manager.
  - The Competent Person will call for outside assistance as needed.
  - The Competent Person will act as liaison between outside agencies and on-site personnel.

- The Competent Person will take appropriate measures to stabilize the incident scene.
- The IRSE Project Manager will provide technical guidance to the Competent Person as needed and notify the MCS's representative.
- The Competent Person will ensure that any injured employee's supervisor completes an injury report form and forwards the form to the Project Manager or Site Safety Officer.

#### 4.4.3 Safety Signals

- 1) While working on site, the following hand signals will be used for communication when necessary.

<u>Hand Signal</u>	<u>Meaning</u>
Arms crossed over head	Shut off equipment
Hand gripping throat	Out of air, can't breathe
Both hands around waist	Leave area immediately
Wave hands over head	Need assistance
Thumbs up	Okay, I am all right, I understand
Thumbs down	No, negative

- 2) Vehicle or portable air horns will be used for alarm signals as follows:
  - One long blast: Emergency evacuation of the site
  - Two short blasts: Clear working area around powered or moving equipment

#### 4.4.4 Medical Emergency

##### 4.4.4.1 General

- 1) Prior to field work, Site Health and Safety Officer will contact and coordinate with all potential emergency response organizations so that they will be aware of any potential site hazards and can meet training and medical requirements. All employee injuries must be promptly reported to the Competent Person. The Competent Person will:
  - Ensure that the injured employee receives prompt first aid and medical attention.
  - Contact Emergency Services at 911 and state clearly "This is a emergency at the East Helena Asarco Plant" ever medical attention is required to ensure that appropriate services are provided.
  - Complete the appropriate form or forms and submit them to the Project Manager or Site Safety Officer within one business day of an incident. Forms include:
    - Supervisor's Employee Injury Report (to be completed by the employee's supervisor)

- Vehicle Accident Report
- General Liability, Property Damage and Loss Report
- Ensure that the Project Manager and Site Safety Officer are immediately notified of the incident.
- Initiate an investigation of the incident, with the assistance of a representative prior to restarting work activities.

#### **4.4.4.2 Chemical Inhalation**

- 1) Any employee complaining of symptoms of chemical overexposure will be removed from the work area and transported to the designated medical facility for examination. The Competent Person must contact the Project Manager and Site Safety and Health Officer immediately.

#### **4.4.4.3 Eye Contact**

- 1) Project personnel who have had contaminants splashed in their eyes or who have experienced eye irritation while on the site shall immediately proceed to the eyewash station. Do not decontaminate before using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Thoroughly flush the eye with clean water. Arrange prompt transport to the designated medical facility.

#### **4.4.4.4 Skin Contact**

- 1) Project personnel who have had skin contact with contaminants will, unless the contact is severe, precede through the decontamination facilities to the wash-up area. Personnel will remove any contaminated clothing, and then wash the affected area with water. The worker should be transported to the medical facility listed below if they show any sign of skin reddening or irritation or if they request a medical examination, MSDS should be made available to medical staff for evaluation, if available.

#### **4.4.4.5 Personal Injury Accident**

- 1) In the event of a personal injury accident, the Competent Person will assess the nature and seriousness of the injury. In the case of serious or life-threatening injuries, normal decontamination procedures may be abbreviated or bypassed. Less serious injuries, such as strains, sprains, minor cuts, and contusions, may only be treated after the employee has been decontaminated.

Following decontamination, an IRSE project team member qualified in FA/CPR will administer suitable first aid. The Competent Person will then, if necessary, arrange transport to the appropriate medical facility. The Project Manager must be notified of all recordable injuries, illnesses, and vehicle accidents. Washington State Department of Labor and Industries must be verbally notified within eight hours of any accident resulting in a fatality, within 24 hours of in-patient hospitalization.



- 2) Because the bites of snakes, spiders, scorpions are rare, the recommended treatment is outlined here as a reminder in case of a bite. DO NOT cut the site of the bite and suck out the venom, but rather lie the victim down and keep the person calm. Try to keep the affected area lower than the heart. Ice may be applied to the area of the bite but make sure that there is no direct skin contact with the ice. Use a towel for insulation to prevent freezing the skin. DO NOT use a tourniquet or constricting band on the affected limb. Get the victim to medical attention.

#### **4.4.4.6 Fire**

- 1) In the case of a fire on the site, the Competent Person will assess the situation and determine the proper response. All personnel NOT trained in the use of fire extinguishers shall evacuate the area involved. Only IRSE personnel trained in the use of extinguishers may attempt to extinguish the fire with available extinguishers if it is safe to do so. If these trained employees do not wish to make the attempt, they are to evacuate also. In the event of ANY fire, IRSE will call the East Helena Fire Department at the number listed in the Site Specific Safety Plan and notify the Site Safety and Health Officer immediately. Fire fighting is a job for the fire department. No property or equipment is so important as to risk an employee's life.

#### **4.5 Failure of Work Area Containment System (where applicable)**

- 1) The work enclosure and negative air system will be closely monitored for failure or a breach. If such an event occurs, the work inside would immediately stop and the problem resolved. A breach in containment could be quickly repaired with duct tape; if the negative air system is the source of problems, the cause of the malfunction will be determined, and the necessary repairs or replacements made so that work can resume.
- 2) Asbestos waste that can be vacuumed will be contained in a HEPA vacuum. The bagged waste from the operation would not create a spill hazard. The asbestos waste inside the HEPA vacuum will be removed inside a containment area built specifically for this purpose.

#### **4.6 Emergency Information**

- 1) Before the start of the project, contact will be made with local authorities and emergency services to establish a communication channel during an event of emergency and to familiarize the project personnel with the communication procedures and services. Pertinent emergency information will be included on the daily tailgate safety meeting forms.
- 2) The Site Specific Safety Plan at Appendix E contains directions to St Peter's Hospital (see also Emergency Phone List attached).

#### 4.6.1 Key Project Personnel

IRSE Project Manager	Carl Burnham	509-927-7867	office
		509-998-8257	mobile
IRSE Competent Person	Mark Kazemba	509-884-4267	mobile
IRSE Health and Safety Officer	Robert Reed	509-927-7867	
CWC Project Manager	_____	_____	office
		_____	mobile
CWC Safety and Health Officer	_____	_____	office
		_____	mobile
Asarco Plant Manager	Blaine Cox	406-227-4098	office
		406-459-8542	cell
Asarco Environmental Manager	Jon Nickel	406-227-4529	office
Department of Environmental Quality		406-444-5300	office
OSHA Regional Office		406-247-7494	office (Billings)
Montana DEQ (NEHEPS)	John Podolinski	406-444-2690	office
		406-444-1499	fax
Occupational Medicine Associates	Dr. Royce Van Gerpin	509-455-5555	office

#### 4.6.2 Medical Care Facilities

Saint Peter's Hospital  
 2475 Broadway  
 Helena, MT 59601  
 (406) 442-2480

#### 4.6.3 Emergency Telephone Numbers

Emergency	<b>911</b> Notify Emergency Crews: Say <i>"This is an emergency at the E Helena Asarco lead smelter"</i>
National Response Center (spills)	800 - 424-8802
Regional Poison Control Center	800 - 525-5042
Fire Department	406-227-5377 (Dispatch) or 911
Police Department	406-227-5377 (Dispatch) or 911

## **5.0 Asbestos and Lead Removal Techniques and Procedures**

- 1) Asbestos-containing materials that will be removed from the site buildings and are judged by a competent person to be friable (i.e., those ACMs that, when dry, can be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 1) Lead Dust is present within the interiors of structures schedule to be demolished. These structure will be cleaned of the dust before demolition of the structure.
- 2) Lead Dust waste that is collected during cleaning of the structures will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.

### **5.1 Notifications**

- 1) IRSE will make required notifications to the Department of Environmental Quality and submit these notifications to CWC before beginning work.

### **5.2 Work Area Preparation**

#### **5.2.1 Warning Signs – Asbestos Abatement**

- 2) Danger signs meeting the specifications of OSHA Construction Safety Order, Section 1529 and WAC 296-62-077 will be posted at any location and approach where regulated areas are present. Signs will be posted at a distance sufficiently far enough away from the work areas to permit any employee or visitor to read the sign and take the necessary protective measures to avoid exposure. Warning signs shall include the following wording:

**DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE CLOTHING  
ARE REQUIRED IN THIS AREA**

- 2) These warning signs shall be printed in letters of sufficient size to be clearly legible.

#### **5.2.2 Warning Signs- Lead Dust Abatement**

- 3) Entrance by non- trained personnel into the lead paint removal area will be restricted using 3" barrier tape posted at the work area perimeter. Warning tape shall include the following wording:

**Danger Lead Removal  
Authorized Personnel Only**

- 2) The warning tape shall be printed with letters of sufficient size to be clearly legible.

### **5.2.3 Electrical Power**

- 1) The contractor will provide adequate power at each of the buildings. IRSE will provide temporary lighting sources and ensure safe installations (including ground faulting) of temporary power sources and equipment by complying with all applicable electrical code requirements and OSHA requirements for temporary electrical systems, within each building, as applies.

### **5.2.4 Establishing Asbestos Removal Work Areas**

- 1) During indoor Class I removal of thermal system insulation, the wrap and cut method will be utilized. (HEPA) vacuums and wet methods will be utilized.
- 2) As applicable, IRSE will seal the exterior of the regulated areas. All windows, doors, and any other openings to the outside of the building from the regulated areas, will be sealed with a minimum of one layer of 6-mil poly sheeting with duct tape, until a negative exposure assessment is conducted.
- 3) During Class I removal of TSI using glovebag and wrap and cut methods with HEPA vacuum method procedures, the work area will be restricted using signs as described in 5.2.1. 6-mil poly will be installed on floors/ground in work area. Negative air machines may be installed in order to provide clean air from outside the work area at sufficient quantities and at strategic locations, so as to provide clean air in the workers' breathing zone, as described in Appendix D IRSE Hazardous Material Contractor Quality Control Plan.
- 4) During outdoor Class II removal of transite shingles and skirting, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- 5) During outdoor Class II removal of metal siding, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- 6) During Class II removal of floor covering, the work area will be restricted using signs as described in 5.2.1. 6-mil poly will be installed critical in the work area. Negative air machines will be installed in order to provide clean air from outside the work area at sufficient quantities and at strategic locations, so as to provide clean air in the workers' breathing zone, as described in Appendix D IRSE Hazardous Material Contractor Quality Control Plan.
- 7) During Class II removal of asbestos-containing roofing materials a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- 8) During Class II removal of window caulking, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 5-10' out from the base of the building.

- 8) During removal of all Class II work, the area will be restricted using signs described in 5.2.1. Specific means and methods will be found in Appendix D.
- 6) 2" red "DANGER ASBESTOS - DO NOT ENTER" tape will be used to restrict access by untrained personnel.

### **5.2.5 Establishing Lead Dust Removal Work Areas**

- 1) As applicable, IRSE will seal the exterior of the regulated areas. All windows, doors, and any other openings to the outside of the building from the regulated areas, will be sealed with a minimum of one layer of 6-mil poly sheeting with duct tape, until a negative exposure assessment is conducted.
- 2) 2" red "DANGER LEAD - DO NOT ENTER" tape will be used to restrict access by untrained personnel.

### **5.3 Workplace Entry and Exit Procedures – Asbestos and LEAD**

- 1) IRSE will be using mobile trailer designed as a 3-stage worker decontamination unit, and a fixed worker decontamination unit (2- or 3-stage, depending on the scope of work at each individual work site) and locate it next to the entrance of the work area.
- 2) If the quantity of thermal system insulation exceeds 10 linear feet or 25 square feet, IRSE will construct a three-stage decontamination unit, including clean room, shower and dirty room, contiguous to the "regulated work area". If the quantity of ACM to be abated is less than 10 linear feet or 25 square feet, IRSE will construct a two-stage decontamination unit, including clean room and dirty room, contiguous to the "regulated work area". The procedures that will be used to enter decontamination units are described below.
- 3) Workers will enter the regulated work areas through the worker decontamination unit. The decontamination unit is a fully enclosed system.
- 4) These decontamination units will include an equipment or "dirty" room, a functional shower equipped with hot and cold running water (if necessary), and a changing or "clean" room in series. The decontamination units will also be constructed in such a manner as to provide a systematic reduction of contamination for the workers and equipment exiting the regulated work area. Personnel entry into and egress from the regulated work areas will be through the decontamination units. Equipment and material replenishment may also be conducted through the decontamination unit.
- 5) Wastewater resulting from the operation of the shower units shall be filtered with a 5-micron pore-size filtration system before reuse or discharge. To the extent feasible, filtered wastewater will be reclaimed and used on site for application in wet method work practices. Wastewater to be discharged shall be sufficiently filtered to meet state and local water quality objectives before discharge. Filters shall be changed as necessary to achieve this objective.

- 6) Before exiting the work area, personnel shall remove outer protective clothing and use a HEPA vacuum to remove ACM debris from protective clothing. Workers shall then proceed to move disposable clothing and dispose of it as hazardous waste. Non-disposable clothing (such as work boots) shall be decontaminated before being removed from the work area.

\*\*Removing asbestos dust from protective clothing or equipment by blowing, shaking, or any other means that disperses asbestos fibers into the air shall likewise be prohibited.

- 6) If applicable, workers exiting the regulated work areas will wash (shower) all areas of the body that were potentially exposed to asbestos contamination. Respirators shall continue to be worn by workers until the worker has entered the shower and begun to wash. Once the head has been deluged with water, the respirator may be removed. IRSE will supply workers with soap and shampoo to use in the showers.
- 7) A secure change room shall be provided outside the decontamination units and shall be equipped with storage for workers' street clothes and personal belongings. Workers are to change from street clothes each day before entering the regulated work area. Workers are to change back into street clothes each day before leaving the work site. Personnel are prohibited from wearing potentially contaminated clothing off the site. Housekeeping within the change room will be maintained by IRSE. Periodic area air monitoring will be conducted to evaluate housekeeping efforts.
- 8) Waste containers shall also be decontaminated using HEPA vacuums and by wet wiping before being removed from the work areas.
- 9) In the event an emergency egress from within the regulated work is required, the above-described personnel decontamination procedures will not be required. IRSE will exercise judgment to ensure that worker health and safety is placed above environmental contamination concerns.
- 10) In those instances when it is not feasible to provide shower facilities contiguous with the work area or where the work is performed outdoors, the Contractor shall ensure that employees remove (1) asbestos contamination from their worksuits in the equipment room utilizing a HEPA vacuum before proceeding to a shower that is not adjacent to the work area, or (2) their contaminated worksuits in the equipment room, don a clean worksuit, and proceed to a shower that is not adjacent to the work area. A second inner disposable/breathable Tyvek whole-body coverall may be utilized by workers for modesty's sake under the primary outer worksuit. The outer suit will be cleaned using a HEPA vacuum and removed within the isolated work area.
- 11) The containment design and decontamination unit that will be utilized for each work area will be dependent on the DEQ asbestos work classification.



## **5.4 Personal Protective Equipment**

- 1) Except when more stringent requirements are set forth, the personal protective equipment (PPE) utilized during the conduct of this work must meet or exceed the requirements contained in Title 29 CFR 1926.1101.

### **5.4.1 Respiratory Protection**

- 1) Half-face negative pressure respirators (equipped with HEPA filters) will be utilized for Class I and II materials being removed on this project. Protective glasses or goggles worn by workers will conform to the specifications of the ANSI Z87.1 standard of Title 29 CFR §1910.133.
- 2) Half-face negative pressure respirators (equipped with HEPA filters) will be worn by all personnel working within Lead Dust Removal Work Areas.
- 3) Once a negative pressure enclosure (if applies) has been visually inspected and placed under a negative air pressure differential, full-faced supplied air respirators operated in constant flow or pressure demand mode and equipped with HEPA escape filters, will be worn by workers, supervisors, work monitors, industrial hygienists, and other entering the regulated work area.
- 3) During outdoor Class II removal of materials, half-face negative pressure respirators equipped with HEPA filters will be used.
- 4) During indoor Class II removal of all materials identified, half-face negative pressure respirators equipped with HEPA filters will be used.
- 5) All respirators shall be used in a manner consistent with state-of-the-industry practices. The respirators shall be worn with head straps in direct contact with the head and shall not be worn on the outside of the hoods of disposable whole-body coveralls. An exception to this is allowable in those instances when a remote decontamination unit is being utilized and the worker is double suited. Respirators shall be worn until proper personal decontamination methods, as described herein, are completed.
- 6) The Contractor will provide respirators in accordance OSHA 1019.133 Respirator Protection

### **5.4.2 Whole Body Protection**

- 1) Work boots with nonskid soles or impermeable work-boot covers shall be worn by workers. Protective footwear worn by workers shall conform to the specifications of the ANSI Z41.1 standard. Work boots that have come into contact with contaminated material shall be cleaned, decontaminated, and bagged before removal from the work area.
- 2) Protective head gear (hard hats) shall be worn at all times that work is in progress. Protective head gear worn by workers shall conform to the specifications of the ANSI Z89.1 (Class A) standard. Hard hats shall be thoroughly decontaminated before removing from the work area.

- 3) In work areas where excessive noise is prevalent, worker shall wear hearing protection sufficient to ensure that the worker's 8-hour time-weighted average (TWA) exposure does not exceed 85 Dba.
- 4) IRSE will make available extra sets of PPE to be used by the owners authorized representative for use to enter the regulated work areas.

## **5.5 Asbestos Removal Techniques and Procedures**

- 1) For the purposes of this work plan, the removal of ACM thermal system insulation (TSI) or ACM surfacing materials will be considered "Class I Asbestos Work," as defined by OSHA 1915.1001 and Title 29 CFR 1926.1101 and shall be conducted in accordance with work practices and requirements set forth for Class I work.
- 2) IRSE will conduct the construction activities described herein in accordance with all currently applicable federal, state, and local laws and regulations including, but not limited to, Title 29 CFR 1926.1101.
- 3) All asbestos-containing material thermal system insulation will be removed via the glovebag method or glovebag and wrap and cut method, with negative air ventilation procedures.

### **5.5.1 Removal of ACM Thermal System Insulation from Buildings**

- 5) IRSE will then pre-clean the work area. This will entail cleaning of any visible asbestos debris and dirt which may affect area and clearance air monitoring. Following pre-cleaning, IRSE will begin installing glovebags on the pipes which have been determined to contain asbestos-containing thermal system insulation.
- 6) The IRSE Competent Person will then conduct visual inspections and smoke testing on the glovebags and ensure that all necessary tools are present, including Hudson sprayers, waste bags, and a HEPA vacuum.
- 7) Only after satisfactory visual inspections from the IRSE Competent Person will the go ahead to begin asbestos removal be given.
- 8) All glovebagging will be conducted in two-man crews. One worker will remove the asbestos-containing pipe insulation inside the glovebag while the other worker constantly mists the insulation with amended water.
- 9) Once the ACM insulation has been removed from the pipe and is on the bottom of the glovebag, the pipe and top inside portion of the glovebag will be wet wiped clean. IRSE will twist the bag several times and tape it to keep the ACM in the bottom during removal of the glovebag from the pipe. A HEPA vacuum should be used to evacuate air out of the glovebag.
- 10) A 6-mil disposal bag will be slipped over the glovebag (while still attached to the pipe). The tape holding glovebag to pipe will then be removed and the top of glovebag opened then folded down into waste bag.

- 11) Following an acceptable visual inspection from the CWC Site Safety Officer, IRSE will apply an encapsulant to all surfaces in the work area and clearance sampling can be collected for analysis.

#### **5.5.2 Outdoor Removal of Transite Shingles and Metal Siding**

- 1) The workers will don appropriate PPE as described in Section 5.4.
- 2) IRSE will perform setup of the work area as described in Section 5.2.3(3).
- 3) IRSE will notify the on-site Safety Officer prior to beginning removal so that visual inspections can be conducted to insure that all necessary tools are available, including water, HEPA vacuum, lined dumpster.
- 4) After satisfactory visual inspection by the Safety Officer, IRSE will begin transite removal.
- 5) Transite removal will be conducted using methods described in the IRSE Hazardous Material Contractor Quality Control Plan.

#### **5.5.3 Removal of all other Class II Materials**

- 1) The workers will don appropriate PPE as described in Section 5.4.
- 2) IRSE will perform setup of the work area as described in Section 5.2.3(7).
- 3) IRSE will notify the on-site Safety Officer prior to beginning removal so that visual inspections can be conducted to insure that all necessary tools are available, including water, HEPA vacuum, lined dumpster.
- 4) After satisfactory visual inspection by the Safety Officer, IRSE will begin removal of specific materials, as identified in Appendix D.
- 5) Class II removal will be conducted using methods described in the IRSE Hazardous Material Contractor Quality Control Plan.

#### **5.5.4 Final Visual Inspection of Work Area**

- 1) Following an acceptable visual inspection by the CWC Site Safety Officer after asbestos removal from each asbestos removal work area, IRSE will apply an encapsulant to all surfaces in the work area and clearance sampling can be collected for analysis.
- 2) All abated areas will be inspected by the Contractor, CWC Onsite Supervisor and IRSE supervisor. Upon successful inspection, each will sign the completed form "Final Inspection Report" Form. The Form can be found at the end of Attachment C: Forms.

## **5.6 Removal of Lead Dust from Buildings**

- 1) IRSE will conduct the construction activities described herein in accordance with all currently applicable federal, state, and local laws and regulations including, but not limited to, Title 29 CFR 1019.10025.

### **5.6.1 Vacuuming Lead dust in Building**

- 1) The workers will don appropriate PPE as stated in Section 5.4 and IRSE Hazardous Material Quality Control Plan.
- 2) IRSE will then perform setup of the "Lead Removal Work Area" as stated in Section 5.2.4. (1), including installing critical barriers.
- 3) IRSE will also install a two stage decontamination unit as stated in Section 5.3. The decontamination unit will be placed at the doorway leading into the building or at a central area on site.
- 4) Once the decontamination unit and all critical seals have been installed, the IRSE Competent Person will perform a visual inspection of the work area to ensure that all critical seals are in place and that adequate negative pressure has been established, if applies.
- 4) All abated areas will be inspected by the Contractor, CWC Onsite Supervisor and IRSE supervisor. Upon successful inspection, each will sign the completed form "*Final Inspection Report*" Form. The Form can be found at the end of Attachment C: Forms.

## **6.0 Waste Handling and Disposal**

### **6.1 Packaging and Storage of Waste and Removal from the Work Area**

- 1) The friable ACMs that will be removed from the project site and are judged by a competent person to be friable (i.e., those ACMs that, when dry, can be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 2) Friable asbestos waste shall be placed in two layers of 6-mil polyethylene disposal bags.
- 3) All friable asbestos waste (bagged) will exit the work area through the equipment room of the decontamination unit or from a separate waste load out decontamination unit. These waste loads out units will be contiguous to the work area containment.
- 4) The personnel loading the asbestos-containing waste will be protected by disposable clothing and, at a minimum, half-facepiece air-purifying dual-cartridge respirators equipped with high efficiency filters.
- 5) The bagged or wrapped asbestos waste shall be properly labeled and placed in locked storage containers. At a minimum, the outside of each waste bag or package containing asbestos hazardous waste will be labeled as described in 6.2(5).

### **6.2 Packaging and Storage of Nonfriable Waste and Removal from the Work Area**

- 1) The nonfriable ACMs that will be removed from the project site and are judged by a competent person to be nonfriable (i.e., those ACMs that, when dry, cannot be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 2) Nonfriable asbestos waste will be loaded directly into a mega boxes, (Gaylord boxes) place in disposal bags and doubled bagged or double wrapped with 6 mil poly.
- 3) The personnel loading the asbestos-containing waste will be protected by disposable clothing and, at a minimum, half-facepiece air-purifying dual-cartridge respirators equipped with high efficiency filters.
- 5) The wrapped asbestos waste shall be properly labeled and placed in locked storage containers. At a minimum, the outside of each package containing asbestos hazardous waste will be labeled as follows:

**DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD  
HAZARDOUS WASTE  
STATE AND FEDERAL LAW  
PROHIBITS IMPROPER DISPOSAL  
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY  
AUTHORITY OF THE WASHINGTON DEPARTMENT OF  
TOXIC SUBSTANCES CONTROL**

Generator's Name \_\_\_\_\_

Address \_\_\_\_\_

Manifest \_\_\_\_\_

RQ, Asbestos, 9, NA2212, III

- 6) The asbestos disposal containers (e.g., bags, wraps and boxes) and storage areas shall be secured and placarded with appropriate warning signage

### **6.3 Transportation and Disposal**

- 1) The disposal of waste that contains asbestos waste and lead waste will stay onsite and be placed in a storage area designated by the General Contractor.



## **7.0 Air Monitoring Sampling**

### **7.1 Personal Air Monitoring – Asbestos**

- 1) IRSE's Competent Person will be conducting personal air monitoring on workers involved in the project. Personal air monitoring for asbestos will be conducted in accordance with Title 29 CFR 1926.1101. The IRSE Competent Person shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized.
- 2) Personal exposure monitoring for asbestos shall be conducted utilizing single-use standard 25-mm-diameter, 0.8 -micron pore size, MCE membrane filters and cassettes with nonconductive cowlings ("barrels") and shrink bands. Air samples for asbestos concentrations will be analyzed by PCM Method 7400/7402.
- 3) The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 fiber per cubic centimeter (f/cc) as averaged over a sampling period of 30 minutes nor in excess of 0.1f/cc as expressed as an 8-hour TWA.
- 4) The Contractor will post the results of daily personal air monitoring at the job site.

### **7.2 Pre-abatement, Area and Perimeter Sampling – Asbestos**

- 1) Except as otherwise noted, environmental sampling for airborne asbestos shall be conducted utilizing single-use, standard 25-millimeter-diameter, 0.8-micron pore size, mixed MCE membrane filters and cassettes with nonconductive cowlings ("barrels") and shrink bands. Air samples for asbestos concentrations will be analyzed by PM Method 7400.
- 2) IRSE Competent Person shall conduct daily environmental air sampling for airborne fiber concentrations outside the regulated asbestos work areas. A minimum of two samples will be collected outside each Class I negative pressure enclosure abatement activities.
- 3) Pre-abatement (baseline or background) air sampling will also be conducted by IRSE's supervisor. These samples will be collected in general accordance with 29 CFR 1926.1101, although the number of samples collected per location will vary. Air samples for baseline asbestos fiber concentrations will be analyzed by PCM Method 7400. Pre-abatement air samples will be collected by "nonaggressive" methods.

### **7.3 Final Cleaning, Clearance Sampling Methodology and Analysis – Asbestos**

- 1) Visual inspections and air clearance sampling of each work area shall be conducted by an independent contractor hired by the owner/general contractor. Following the completion of asbestos abatement and final detail cleaning in each work area. The cleaning phase will include misting the air with amended water to reduce airborne fiber concentrations. The cleaning process shall also include vacuuming with HEPA-equipped vacuums and wet wiping. Horizontal surfaces within the area shall be cleaned of all visible asbestos debris using a HEPA vacuum and wet wiped.

If a visual inspection reveals residual three-dimensional debris, IRSE will abate the debris, detail clean the area of the debris, and repeat the HEPA vacuum and wet wiping process.

Once the recleaning process is complete, the work area shall be subject to another visual inspection for the presence of residual three-dimensional debris.

- 2) Satisfactory completion of this visual inspection will be followed by the encapsulation of the substrates and/or systems from which the ACM was removed. Following a suitable period of time to allow the encapsulant to dry, final air clearance samples will be collected. Clearance air samples will be collected using the methods described herein. Negative pressure equipment (NPE), if applicable, will continue in operation until satisfactory clearance air sample results are achieved. Failure to achieve satisfactory air clearance results will result in IRSE repeating the final cleaning process and the subsequent collection of additional clearance air samples.
- 3) Collection and analysis of clearance air sample monitoring for asbestos hazard abatement will be an independent industrial hygiene provider under contract with the owner/general contractor. Collection and analysis of clearance work areas after the ACM hazard has been abated and the work area has passed a visual clearance
- 4) Five or more samples will be collected within each containment. Clearance air samples indicating airborne fiber concentrations within the requirements of AHERA Guidelines for asbestos response action activities in schools will be received, and written permission from Northern Industrial Hygiene will be obtained before releasing IRSE to demobilize the work area.
- 5) Once a work area has been abated of ACM hazards, satisfactory final air clearance testing has been concluded and written permission from Northern Industrial Hygiene has been obtained, any remaining layers of polyethylene sheeting shall be removed and disposed of as asbestos waste

#### **7.4 Personnel Air Monitoring – Lead**

- 1) IRSE's Competent Person Supervisor will be conducting personal air monitoring on workers involved in the project. Personal air monitoring for lead will be conducted in accordance with Title 29 CFR 1926.62. The IRSE Supervisor shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized. 2) Personal exposure monitoring for lead shall be conducted utilizing single-use standard 37-mm-diameter, 0.8 -micron pore size, MCEF membrane filters and cassettes with nonconductive cowlings ("barrels").
- 3) The Contractor's workers shall not be exposed to airborne lead in concentrations over  $15\mu\text{g}/\text{m}^3$  (half of the action level) as expressed as an 8-hour TWA. If airborne concentrations of lead in the breathing zone of any individual employee reaches  $10\mu\text{g}/\text{m}^3$ , work will stop and the Northern Management Services Project Manager will be notified. Engineering controls will be re-evaluated and additional engineering controls will be implemented before work resumes.

- 4) The Contractor will post the results of daily personal air monitoring at the job site within 72 hours of air sample collection.

#### **7.5 Area and Perimeter Sampling - Lead**

- 1) The IRSE Supervisor shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized.
- 2) Monitoring for lead shall be conducted utilizing single-use standard 37-mm-diameter, 0.8-micron pore size, MCEF membrane filters and cassettes with nonconductive cowlings ("barrels").
- 4) IRSE's Supervisor will collect air samples prior (baseline or background) to LBP removal. These samples will be collected for information and documentation only, and are not required by contract documents or regulation.

### **8.0 Laboratory Analysis of Personal Air Samples**

- 1) All personal and OWA air samples will be analyzed at Mountain Labs, Inc.. This lab is an American Industrial Hygiene Association (AIHA) and an EPA National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.
- 2) All air samples for asbestos concentration will be analyzed by PCM Method 7400/7402.

## **Appendices**

- A Supervisor Qualifications**
- B Site Specific Hazard Analysis**
- C ACM Removal Procedures**
- D Fall Protection Plan**
- E Permits/Notifications**
- F Material and Equipment Data**
- G Air Monitoring Plan/Sample Results**
- H Respirator Protection Program/Medical Clearance Documentation**
- I Drawings/Site Layout**
- J Laboratory Certifications**
- K Material Safety Data Sheet**

**Appendix A**  
**Supervisor Qualifications**



**MARK KAZEMBA**  
**Supervisor**

**FIRM AFFILIATION**— Mark is a full time employee at IRS Environmental

**YEARS OF RELEVANT EXPERIENCE**— 20 years in asbestos abatement field.

<b>ACTIVE REGISTRATIONS</b>	<b>ACTIVE REGISTRATIONS (CONTINUED)</b>
AHERA-Certified Asbestos Supervisor	Professional
EPA-Certified Asbestos Supervisor	HAZMAT Certified – 40 hour
Crane and Rigging	CPR / First Aid
Cutting and Welding safety certified.	

**SPECIFIC QUALIFICATIONS,**

Mr. Kazemba has been employed by IRS Environmental since 2005. His relevant project experience since 1987 includes hazardous materials abatement projects supervised at University of Washington, University of Idaho, and University of Montana. These hazard control activities include asbestos and lead painted building component removal, handling of PCB containing lighting ballasts, mercury lamps, and universal hazardous wastes. Mark Also has five years of home building experience prior to his asbestos abatement career.

**RELEVANT PROJECT EXPERIENCE**

Mr. Kazemba experiences in specific evaluation criteria are shown in the table below. The project descriptions that follow are descriptions of projects requiring skills that are relevant to this project.

✓	Asbestos abatement	✓	Demolition	✓	Residential abatement
✓	Asbestos abatement in occupied commercial or public industry buildings, including college campus. Work experience includes University of Washington, University of Idaho, and university of Montana.	✓	Management and or Supervision of three asbestos abatement projects over \$ 300,000.00	✓	Dismantling of Lighting Fixtures including Handling, Storage and Disposal of Universal and Hazardous Wastes.
✓	Commercial/Industrial abatement		Cost tracking		Test pit/trench excavation
✓	Equipment decontamination	✓	Field documentation		<b>WASTE MANAGEMENT (CONCOVER, COMPACTION,</b>
✓	Excavation		Instrument installation		
✓	Decontamination or waste mgmt of contaminated tangible property	✓	Lead-based paint abatement		Waste treatment, transport, and/or management
			Monitoring well installation		
✓	Debris removal	✓	Public relations		UST removal, closure, replacement

**University of Idaho**—On site supervisor for project involving abatement of thermal system insulation, vinyl asbestos floor tile, spray applied fireproofing, lead related demolition work, PCB Light Ballast Handling, and Lab Sinks.

**Fairchild Air Force Base** — On site supervisor during selective demolition activities and asbestos removal activities.

**The Postal Annex-** On site supervisor during removal of PCB Ballasts, 190,000 SF vinyl asbestos floor tile and asbestos mastic, 120,000 SF of asbestos containing browncoat ceiling texture and 1,000 LF of asbestos thermal system insulation.

**Libby Soil Remediation** - On site supervisor during clean up of vermiculite contaminated soil project. Removed and replaced 6-10 Inches of soil on multiple residential sites.

**Kaiser Aluminum** — On site supervisor during removal of thermal system insulation and fire proofing insulation in the soaking pits and batch ovens. Selective demolition of refractory walls and floors to access asbestos materials. Cleaned and abated batch ovens and removed thermal insulation from piping using glove bag procedures.

**Asarco Plant, Helena, MT** - On Site Supervisor during heavy metal dust contamination clean up and removal of 170,000 SF of Galbestos siding, 80,000 SF of Transite siding and roofing panels and 2,000 SF of vinyl asbestos tile and associated mastic.



J Tech, Inc.  
Industrial Hygiene Services

## CERTIFICATE OF TRAINING

THIS IS TO CERTIFY THAT

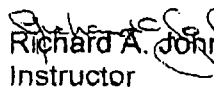
MARK KAZEMBA, XXX-XX-8319

HAS COMPLETED 8 HOURS OF REFRESHER TRAINING IN  
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

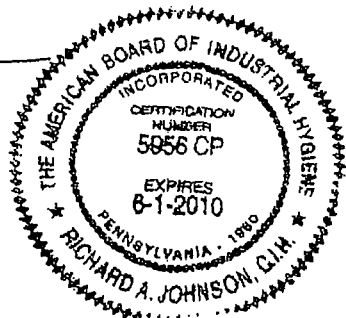
ACCORDING TO THE REQUIREMENTS OF 29 CFR 1910.120  
AND CHAPTER 296-843-20010, WASHINGTON ADMINISTRATIVE CODE

Training Period 3 March 2007

Expiration Date 3 March 2008

 Richard A. Johnson, CIH  
Instructor

Certificate Number 7-0010.18-11



J Tech Industrial Hygiene Services, 2293 West Windermere Avenue, Coeur d' Alene, Idaho 83815 208-676-9965



Occupational Medicine  
Associates

Paula A. Lantsberger, MD MPH  
Terrence D. Rempel, MD 57, 503  
Royce F. Van Gerpen, MD A500423

323 East Second Avenue  
Spokane, WA 99202

509.455.5555  
509.455.4114 FAX

MARK C. KAZEMBA

IKS ENV

REMBE, TERRENCE D

003 CSH

04/12/06

06/02/60

45 M

#218

## ASBESTOS CLEARANCE

Name: Mark Kazemba

Date Examined: 4-12-06

Results: There are no detected health conditions that would place this employee at an increased risk of material health impairment from exposure to asbestos:

☒ Yes

☐ No

Limitations: Recommended restrictions on this employee or upon the use of personal protective equipment: None

Physician's statements: I have informed this employee of the results of the medical exam and of any medical conditions resulting from asbestos exposure that require further explanation or treatment.

☒ I have also informed this employee of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

Physician signature: Paula A. Lantsberger, Terrence D. Rempel, Royce F. Van Gerpen

Examinations Height: 73 Weight: 201 B/P: 122/80 Pulse: 68

	Normal	Abnormal	
Ears:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TMs intact
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Canals clear
Mouth:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Clear / no obstruction
Neck:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Supple / no masses
Lungs:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Clear A + P
Heart:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Regular Rate / no murmur
Abdomen:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No mass / no organomegaly
Lymphatics:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No lymphadenopathy

Adopt 1 eq

PFTs: ☐ Normal ☐ Abnormal ☐ Unacceptable ☐ No change

CXR: ☒ Normal ☐ Abnormal ☐ Unacceptable ☒ No change



WASHINGTON-OREGON-IDAHO-MONTANA  
E. 12415 TRENT AVE.\*SPOKANE,WA 99216  
(509) 927-7867 FAX 928-3933

ASBESTOS\*LEAD  
ENVIRONMENTAL  
SERVICES

**IRS ENVIRONMENTAL OF WA, INC**  
**CERTIFICATION OF WORKER'S ACKNOWLEDGMENT**

\*\*\* WORKING WITH ASBESTOS CAN BE DANGEROUS  
\*\*\* INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPE OF CANCER  
\*\*\* IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS \*  
GREATER THAN THAT OF THE NON-SMOKING PUBLIC

IRS ENVIRONMENTAL requires that:

- \* You be supplied with the proper respirator and be trained in its use.
- \* You be trained in safe work practices and in the use of the equipment found on the job.
- \* You receive a medical examination.

These things have been done at no cost to you. By signing this certification you are acknowledging the fact that IRS Environmental (your employer) has met these obligations to you.

**RESPIRATORY PROTECTION:** I have been trained in the proper use of respirators, and informed of the type of respirator to be used on IRS Environmental asbestos and lead removal projects. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on this project.

**TRAINING COURSE:** I have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course include the following:

Physical characteristics of asbestos  
Health hazards associated with asbestos  
Respiratory protection  
Use of protective equipment  
Negative air systems  
Work practices including hands on or on-job training  
Personal decontamination procedures  
Air monitoring, personal and area



This certifies that

Mark Kazemba

has completed the Responder I  
Course for First Aid and CPR

Course Date 3-2-06

Expiration Date 3-2-08

Instructor Mark Kazemba

**MEDICAL EXAMINATION:** I have had a medical examination within the past 12 months, which was paid for by IRS Environmental or my previous employer. This examination included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

Mark Kazemba  
Employee Signature

3-22-05  
Date

CERTIFIED AS PROVIDED BY LAW AS

ASBESTOS SUPERVISOR  
CERTIFICATE NUMBER: 2007008081A  
EXPIRATION DATE: 09/16/2007

KAZEMBA, MARK C.  
E 24714 SAN CARLOS  
NEWMAN LAKE, WA 99025

Signature Mark Kazemba  
Issued by DEPARTMENT OF LABOR AND INDUSTRIES

MARK C KAZEMBA

has met the requirements of Title 17, Chapter 74.3,  
Subchapter 3, of the Administrative Rules of Montana  
for accreditation in the following asbestos-type  
occupation(s) as indicated by an expiration date(s).

MTA-2317  
C8 MB IN  
09/16/2007  
WK

MT DEQ Asbestos Control Program



WASHINGTON-OREGON-IDAHO-MONTANA  
E. 12415 TRENT AVE. \*SPOKANE, WA 99216  
(509) 927-7867 FAX 928-3933

ASBESTOS\*LEAD  
ENVIRONMENTAL  
SERVICES

### QUALITATIVE FIT TEST RECORD

Name: Mark Kazemba

Issue Date: 2-27-07

Soc. Sec. No.: 471-84-8319

Expiration Date: 2-27-08

Test Operator: Jack Wirth

TYPE OF QUALITATIVE FIT TEST: IRRITANT SMOKE

### RESPIRATOR

Respirator brand: North

NIOSH Approval #: TC-21C-152

Model: 7700

Wear at least 10 minutes: 1/2 5

Size: Small ✓  
Med. ✓  
Lrg. ✓

+/- Pressure fit check: pass

### TEST

Each exercise is performed for one minute

Pass

Fail

Normal Breathing-No talking

✓

✓

Deep breathing-be certain breaths are deep

✓

✓

Turn head side to side-Inhale on each side, do not bump  
the respirator against shoulders

✓

✓

Move head up and down-Inhale when head is in full up position,  
do not bump respirator against chest.

✓

✓

Reading-with eyes closed, repeat slowly and clearly after the  
conductor the "Rainbow Passage"

✓

✓

Jogging in place-jog in place

✓

✓

Normal breathing-No talking

✓

✓

### FINAL FIT

Supervisor Signature: Jack Wirth

Employee Signature: Mark Kazemba

\*\* Employee must have a current qualitative fit test before assigning them a task that requires a respirator to be worn.





CONT. REG. NO. IRSENW1033PN

WASHINGTON-OREGON-IDAHO-MONTANA

12415 E. TRENT AVE. \* SPOKANE VALLEY, WA 99216  
(509) 927-7867 FAX (509) 928-3933

ASBESTOS\*LEAD  
ENVIRONMENTAL  
SERVICES

## QUANTITATIVE FIT TEST RECORD



J TECH  
Industrial Hygiene Services

### CERTIFICATE OF FIT TESTING

J Tech Proudly Announces that

MARK KAZEMBA XXX-XX-8310

has successfully completed Training and Fit Testing  
for the following respirator according to Table 1B, Chapter  
296-842-200 WAC Ambient Aerosol Condensation Nuclei  
Counter (Pariacount)

Full Face Piece NORTH Model 7600 Size M/L

EXP: 3/3/08

## **Appendix B**

### **Site Specific Hazard Analysis**



CONT. REG. NO. IRSENV1033PN

**WASHINGTON-OREGON-IDAHO-MONTANA**

12415 E. TRENT AVE. \* SPOKANE VALLEY, WA 99216  
(509) 927-7867 FAX (509) 928-3933

**ENVIRONMENTAL  
SERVICES**

**ACTIVITY HAZARD ANALYSIS**

<b>Activity:</b> Remove Asbestos CAB Siding, Floor Coverings, Gasket Materials, Pipe Covering, Mastics, Adhesives, roofing and Window Removal.	<b>Date:</b> April 17, 2007
	<b>Project:</b> ASARCO Phase 4 Building Cleaning and Demolition
<b>Description of the work:</b> Install negative pressure enclosure. Remove Asbestos flooring with substrate, CAB Siding and roofing, pipe covering, gaskets, adhesives from floor, roofing materials, metal sidings and roofing and window caulking. Final clean for clearance sampling, visual and air samples and ready building	<b>Site Supervisor:</b> MARK KAZEMBA
	<b>Site Safety Officer:</b> <hr/>
	<b>Review for latest use:</b> Before the job is performed.

Work Activity Sequence (Identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
General Conditions	Noise	Wear hearing protection during the operation of Industrial Hurricane HEPA VAC., Compressor and HEPA Vacuums. Also when working in close proximity of motorized equipment used by all trades in general work area. <ul style="list-style-type: none"> <li>Hearing protection will be worn while using power tools (ex. Skill saw, sawzall)</li> </ul>
General Conditions  General Conditions, Continued	Hand Tools  Hand Tools Continued	<ul style="list-style-type: none"> <li>Tools shall be inspected prior to use and damaged tools will be tagged and removed from service.</li> <li>Hand tools will be used for their intended use and operated in accordance with industry standards;</li> <li>All power tools equipped with a safety guard of any type shall be used only with the guard in place and functioning properly.</li> <li>Portable power tools will be plugged into GFCI protected outlets; and</li> <li>Portable power tools will be Underwriters Laboratories (UL) listed and have a three-wire grounded plug or be double insulated.</li> <li>Tools shall be used only for their intended purpose.</li> <li>All power tools shall be unplugged (electric), de-energized (battery), unhooked from air supply (pneumatic) or pressure</li> </ul>

Work Activity Sequence (Identify the principal steps involved in the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Preparation of plastic enclosure, working in plastic enclosure	Fire hazard	<ul style="list-style-type: none"> <li>• Insure ABC fire extinguishers are in place in every work area. One fire extinguisher for every 2,000 SF of work area per floor.</li> <li>• Insure all workers are properly trained in use of fire extinguishers.</li> <li>• NO SMOKING IS ALLOWED ON SITE IN ANY AREA!</li> </ul>
Mastic removal in enclosed work area	Fire and explosion	<ul style="list-style-type: none"> <li>• Discuss MSDS for mastic removal solvents with each worker</li> <li>• Work area will be fresh-air ventilated with a minimum of 12 air changes per hour.</li> <li>• PPE will be provided by IRS and worn, to include: Safety Glasses, ½ face respirators with appropriate cartridges, disposable polypropylene coveralls, nitrile rubber gloves and boot coverings.</li> <li>• All heat and ignition sources will be eliminated. NO SMOKING IS ALLOWED ON SITE IN ANY AREA!</li> </ul>
Preparation for Asbestos Removal  VAT Removal	Slips, trips and falls due to cords, hoses, wet working conditions.	<ul style="list-style-type: none"> <li>• Maintain housekeeping at all times to prevent tripping hazards</li> <li>• Work areas will be visually inspected and slip and trip hazards will be marked, barricaded or eliminated.</li> <li>• Proper illumination will be maintained in all work areas.</li> <li>• Warning! – Wet plastic floors are slippery. Maintain guardrails on all rolling scaffold, wear non-slip boots!</li> <li>• Warning! Piles of VAT are extremely slippery, like shale rock. Clean up VAT immediately and place in disposal container. Do not allow large accumulations of VAT on floor. DO NOT stand on VAT piles!</li> </ul>
Asbestos VAT removal, placing VAT waste in containers and disposal process.	Strains/Lifting hazards – Heavy disposal bags, vacuum hoses, tools.	<ul style="list-style-type: none"> <li>• 1. Get as close to the load as possible.</li> <li>• 2. Avoid picking up heavy objects placed below your knees.</li> <li>• 3. Keep your back straight when reaching to lift an object. Tighten your stomach muscles to keep your spine from twisting while lifting a load.</li> <li>• 4. Bend with your knees not your back.</li> <li>• Stretch and loosen up before work.</li> <li>• Change direction by moving your feet not your hips. Look ahead to make sure the path is clear.</li> <li>• Remember steps 1-4 above when putting load down or stacking.</li> </ul>
Cement asbestos Board (CAB), metal siding and roofing removal	Strains/Lifting hazards – Heavy disposal bags, vacuum hoses, tools	<ul style="list-style-type: none"> <li>• 1. Get as close to the load as possible.</li> <li>• 2. Avoid picking up heavy objects placed below your knees.</li> <li>• 3. Keep your back straight when reaching to lift an object. Tighten your stomach muscles to keep your spine from twisting while lifting a load.</li> </ul>

Work Activity Sequence (Identify the principal steps involved in the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Cement Asbestos Board (CAB), metal siding and roofing removal - Continued		<ul style="list-style-type: none"> <li>4. Bend with your knees not your back.</li> <li>Stretch and loosen up before work.</li> <li>Change direction by moving your feet not your hips. Look ahead to make sure the path is clear.</li> <li>Remember steps 1-4 above when putting load down or stacking</li> <li>100% Fall protection will be required for work on the roof covered under this AHA, whether it be full guardrail systems or personal fall arrest systems. Refer to the fall protection plans for details.</li> <li>In general, on roof bays, personal fall arrest systems with adequate anchorage is required if guardrail system is in place.</li> <li>Ensure that areas of suspect integrity are adequately marked and barricaded to ensure no possibility that personnel or equipment cannot fall through the roof</li> </ul>
Rollec Roofing Removal		<ul style="list-style-type: none"> <li>100% Fall protection will be required for work on the roof covered under this AHA, whether it be full guardrail systems or personal fall arrest systems. Refer to the fall protection plans for details.</li> <li>In general, on roof bays, personal fall arrest systems with adequate anchorage is required if guardrail system is in place.</li> <li>Ensure that areas of suspect integrity are adequately marked and barricaded to ensure no possibility that personnel or equipment cannot fall through the roof</li> </ul>
Man Lift Operation	<p>Operation Hazards</p> <p>Operators must "NOT"</p>	<ul style="list-style-type: none"> <li>Manlift(s) shall not be used above personnel on the ground or working on the roof.</li> <li>Read and understand the operating instructions and safety rules for the equipment being used.</li> <li>Understand all decals, warnings and instructions displayed on the work platform</li> <li>Inspect for defects that would affect a lift's safe operation. Be alert for cracked welds or other structural defects, leaks in hydraulics, damaged control cables, loose wires, or bad tires.</li> <li>Test the controls to make sure they work.</li> <li>Check the operating condition of the brakes, lights and other automotive-operating accessories, such as horns and warning devices.</li> <li>Use ladders or makeshift devices on the platform so workers can reach higher.</li> <li>Climb up or down extendable arms.</li> <li>Sit on or climb on the edge of the basket.</li> <li>Delay reporting any defects or malfunctions to the supervisor.</li> </ul>

Work Activity Sequence (Identify the principal steps involved in the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
		<ul style="list-style-type: none"> <li>Engage in stunt driving or horseplay.</li> </ul>
Overhead demolition		<ul style="list-style-type: none"> <li>Manlift(s) shall not be used above personnel on the ground or working on the roof.</li> <li>Hard hats will be required for all overhead demolition work.</li> <li>Barricade overhead demolition zones as needed.</li> </ul>
Generators	Fire hazards	<ul style="list-style-type: none"> <li>Fuel equipment <u>prior</u> to use each day, while equipment is cool.</li> <li>Only refuel equipment after the engine has been allowed to cool.</li> <li>Clean up spilled gas immediately.</li> <li>Ensure that gas caps are tight after refueling and periodically during operation.</li> <li>ABC Fire extinguishers will be staged in close proximity to all tools and equipment that are being used and in refueling areas.</li> <li>Sources of ignition are prohibited in areas where equipment is being refueled.</li> </ul>
Generators	Electrical hazards	<ul style="list-style-type: none"> <li>Ensure that generators are adequately grounded to the frame of the device.</li> <li>Ensure that generators are equipped with Ground Fault Circuit Interrupters (GFCI) and that they are tested prior to use.</li> <li>Inspect electrical cords prior to use and remove damaged cords from service.</li> <li>Inspect grounded tools to ensure that the ground prong is in place and that three wire grounded temporary cords are used for these devices.</li> <li>Double insulated tools do not require a third wire grounding conductor.</li> </ul>
Regulated asbestos work area – containment	Asbestos hazard	<ul style="list-style-type: none"> <li>Install signs and barrier tape to create regulated work area prior to any Asbestos removal activities. See asbestos removal work plan.</li> <li>Install multiple layers of 6ml floor below asbestos fireproofing removal area prior to beginning removal.</li> <li>Install multiple layers of 6ml wall covering in area where asbestos fireproofing removal is to occur prior to beginning removal.</li> <li>Install and test negative pressure enclosure and decontamination facilities prior to beginning activities which will disturb asbestos fire proofing or VAT and mastic removal.</li> <li>Only trained and certified workers will be allowed in asbestos regulated work areas.</li> <li>All workers will enter and leave regulated work area through designated decontamination area.</li> <li>Housekeeping shall be a priority. Use installed drop sheets to</li> </ul>



<b>Work Activity Sequence</b> Identify the principal steps involved in the sequence of work activities)	<b>Potential Health and Safety Hazards</b> (Analyze each principal step for potential hazards)	<b>Hazard Controls</b> (Develop specific controls for each potential hazard)
Regulated asbestos work area – containment (continued)		<p>aid prompt clean up.</p> <ul style="list-style-type: none"> <li>• Absolutely no debris will be allowed to accumulate in work areas.</li> <li>• Workers will decontaminate using shower prior to exiting the work area.</li> <li>• All waste will be wrapped or packaged in 6ml plastic immediately.</li> <li>• All packaged waste will be stored in designated covered and locked storage container by end of each work shift.</li> <li>• All workers will wear proper PPE to include ¾ face air purifying respirators (VAT and mastic) , or full faced Type C Respirators (Asbestos fireproofing) full disposable coveralls in addition to on site standard PPE.</li> </ul>
Detail Cleanup	HEPA VAC	<ul style="list-style-type: none"> <li>• Wear hearing protection during use</li> </ul>

Equipment to be used (List equipment to be used in the work activity)	Inspection Requirements (List inspection requirements for the work activity)	Training Requirements (List training requirements including hazard communication)
Detail Clean up (cont.)	Check bags and filters daily if as needed. Check filters daily and remove debris	<ul style="list-style-type: none"> <li>• Use by trained personnel only.</li> <li>• Hearing Protection Program. ear plugs required.</li> </ul>
Hand tools (pry bars, hammers, manual scrapers)	Check handles and tool condition daily	<ul style="list-style-type: none"> <li>• Training on proper use.</li> <li>• Eye Protection.</li> </ul>
Sawzall, Circular Skilsaw.	Daily inspection	<ul style="list-style-type: none"> <li>• Training on proper use.</li> <li>• Eye Protection</li> </ul>
Main lift	Daily inspection	<ul style="list-style-type: none"> <li>• Inspect for defects that would affect a lift's safe operation. Be alert for cracked welds or other structural defects, leaks in hydraulics, damaged control cables, loose wires, or bad tires.</li> <li>• Test the controls to make sure they work.</li> <li>• Check the operating condition of the brakes, lights and other automotive-operating accessories, such as horns and warning devices.</li> </ul>

### ACTIVITY HAZARD ANALYSIS

PRINT

SIGNATURE

Supervisor Name: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

### ACTIVITY HAZARD ANALYSIS (Continued)

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

Employee Name(s): \_\_\_\_\_

Date/Time: \_\_\_\_\_

## **Appendix C**

### **ACM Removal Procedures**

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Decontamination procedures for a full negative pressure enclosure

**NOTE:** *OSHA 1926.65 requires all employees, visitors, and emergency response personnel to receive instructions from a designated company representative before entering areas where hazardous waste operations are being conducted.*

**ENTER:**

1. Enter the decontamination area through the clean room.
2. Remove street clothing and jewelry and place into assigned lockers.  
Check Respirator for defects and replace as needed.
3. DO NOT apply cosmetics, eat, drink, smoke, chew gum or tobacco once inside the decontamination area or work area.
4. Put on PPE (i.e., coveralls, respirator, boot covers, gloves)
5. Check respirator using positive/negative pressure test.
6. Pass through airlock doorways to shower area, equipment area and into the work area.

**EXIT:**

1. Remove PPE (**EXCEPT RESPIRATOR**) in the equipment room. The equipment room is designated for this purpose, with containers for used PPE. This area should be kept organized and free of asbestos and asbestos contaminated materials at all times.
2. Re-usable PPE such as boots, hard hats, safety glasses, can be cleaned and left inside the equipment room to be used upon re-entry to the work area. These items must be completely cleaned in the equipment room and in the shower if they are to be removed from the work area.
3. Proceed to the shower still wearing respirator. Wash body and respirator completely. Discard used water soaked respirator cartridges by reaching through the airlock, back into the equipment room and dropping them into the waste container provided.
4. Pass through the last air-lock and into the clean room. Dry off, and re-dress. Disinfect/clean your respirator using procedures covered in IRSE respirator protection program.

**NOTE:** IRSE requires strict adherence to the guidelines established by OSHA, and the EPA. Eating, drinking, smoking, chewing gum or tobacco or removing respirators inside a known regulated area is grounds for immediate dismissal.

Employee or visitors signature \_\_\_\_\_ Date \_\_\_\_\_

Designated IRSE decontamination representative \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Min enclosure Decontamination Procedures for use during Glove Bag Removal

A clean room will be established at the entrance to each mini enclosure constructed for glove bag removal work. The clean room will be constructed of 2 layers of 6 ml poly over wood frame. A HEPA vacuum will be used to remove asbestos contamination from the workers work suits before they leave the work area.

***ENTRY***

Workers will don two pairs of disposable coveralls over their street clothes and the appropriate respirator. Respirator fit will be checked using positive/negative pressure test. Next, workers will pass through the clean room into the mini enclosure to begin the glove bag and cut and wrap work.

***EXIT***

Worker will remove outer layer of coverall and place in an asbestos disposal bag, then immediately enter the clean room and remove the asbestos contamination from the inner tyvek coverall using a HEPA vacuum. After a thorough HEPA cleaning, the worker may remove the inner tyvek coverall, and proceed to the three stage decontamination center with shower for secondary decontamination.

***NOTE: OSHA 1926.65 requires all employees, visitors, and emergency response personnel to receive instructions from a designated company representative before entering areas where hazardous waste operations are being conducted.***

Employee or visitors signature \_\_\_\_\_ Date \_\_\_\_\_

Designated IRSE decontamination representative \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Preparation of work area for Class One Asbestos Removal

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: IRSE MSDS for spray adhesives.
2. Review at initial safety meeting: Emphasize the importance of ventilating the work area to reduce exposure to vapors while using spray glue.
3. Lock out / Tag out all HVAC and un used circuits within work area before beginning work.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. 1/2 face air purifying respirator with HEPA (purple) filters if friable damaged asbestos is encountered during work area preparation.
2. Disposable coveralls if friable damaged asbestos is encountered during work area preparation.
3. Safety glasses.

***PROPER PREPARATION STEPS:***

1. Seal all critical barriers at work area perimeter with double layer of 6ml poly.
2. Lock out / tag out HVAC system and un-used circuits in work area.
3. Seal all critical HVAC openings with double layer of 6ml poly.
4. Install 6ml poly floors and walls. All horizontal and vertical surfaces will be covered within the work area.
5. Cover all objects within the work area with 6ml poly secured with duct tape.
6. Install second layer of 6ml poly drop sheets over all surfaces.
7. *Install adequate Air Filtration Devices to insure 6 air changes per hour or more.* Install the Air Filtration Devices in a manner which directs the airflow away from the breathing zone of the workers.
8. Allow Air Filtration Devices to run continuously for one to two hours before removal begins to insure integrity of circuits.
9. Install a Two Stage decontaminating decon, the crew will remote to a Three Stage Decon

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_



IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Preparation of work area for class one thermal system insulation materials removal using cut and wrap / glove bag removal methods

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: IRSE MSDS for spray adhesives.
2. Review at initial safety meeting: Emphasize the importance of ventilating the work area to reduce exposure to vapors while using spray glue.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. 1/2 face air purifying respirator purple and black filter cartridges. While using spray glue.
2. Safety glasses.

***PROPER PREPARATION STEPS:***

1. Post 3" DANGER ASBESTOS barrier tape at work area perimeter to restrict access of untrained personnel
2. Seal all critical barriers at work area perimeter with double layer of 6ml poly.
3. Install 6ml poly floors under thermal system insulation to be removed.
4. *Install adequate Air Filtration Devices to insure 6 air changes per hour or more.* Install the Air Filtration Devices in a manner which directs the airflow away from the breathing zone of the workers.
5. Allow Air Filtration Devices to run continuously for one to two hours before removal begins to insure integrity of circuits.
6. Install "Danger Asbestos" Signs at work area entrance.
7. Install Three Stage decontamination center and two stage waste load out before removal begins.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

**VCI Removal**

This activity involves removal of a Class II building material. All other methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

**WORK AREA PREPARATION:**

1. Review at initial safety meeting: each worker at initial safety meeting must complete IRSE Solvent Safety Checklist.
2. Review at initial safety meeting: Emphasize the importance of ventilating the work area to reduce fire hazard and exposure to vapors.

**PERSONAL PROTECTIVE EQUIPMENT:**

1. Disposable polypropylene or Tyvek coveralls.
2. Full Face Air Purifying Pressure Respirator.
3. Latex gloves.
4. Ear Plugs

**REMOVAL PROCEDURES:**

1. Prepare negative pressure enclosure/work area as per written procedures.
2. Pre wet the material before removal. Spray the material with a fine spray of amended water. Wet the material and allow the water to soak into the material until it is *wet enough to remove without causing visible emissions, but not so wet as to damage ceiling substrate below.*
3. Vacuum the material while damp and continue to spray with water as necessary to prevent visible emissions.
4. Remove gross contamination from tools and protective clothing before proceeding to the de-con chamber. Proceed to the equipment room and wash your tools and equipment. The tools and equipment must be cleaned or placed in clean bag prior to removal from work area.
5. Take containerized waste to the waste load-out. Wet wash /wipe the bag in the equipment room before passing it into a clean asbestos disposal bag held by a worker in the second clean room.
6. The second bag will be sealed immediately and placed in a locked covered secure storage dumpster or truck for transport and disposal.

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

VCI Removal

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisor signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena, Montana

**Trailer Mounted Vacuum Operation**

***PRE-WORK SAFETY REQUIREMENTS:***

- 1) Review at initial safety meeting: IRS Environmental MSDS for material(s) being vacuumed.
- 2) Review at initial safety meeting: Emphasize the importance of working in pairs, proper use of pop-off valves, air horns, radio communication, ear protection, safety glass, confined space and fall protection plan.
- 3) Review at initial safety meeting: When performing the daily safety meeting, document where the mechanical relief valve is located at on the vacuum line and also who will be the monitor of the relief valve.

***PERSONAL PROTECTION EQUIPMENT:***

- 1) Half face air purifying respirator for interior cleaning and soil removal.
- 2) Full face powered air purifying respirator for attic space removal.
- 3) Hearing protection
  - a. Ear muffs and/or disposable ear plugs.
- 4) Hard hats
- 5) Safety glasses
- 6) Disposable polypropylene coveralls
- 7) Gloves
  - a. Leather style
  - b. Rubber

***PROPER OPERATION STEPS:***

- 1) Perform all maintenance checks
- 2) Ensure truck is on level and secure ground
- 3) Ensure that all body doors are closed
- 4) Properly connect vacuum hoses as required
- 5) Safe guards against dust explosions

***VACUUM SAFETY:***

- 1) When vacuuming around anything energized, examples (electrical, hydraulic, lock-out/tag out procedures will need to be performed.
- 2) Use gaskets at all times to ensure that there will be no water leaks or vacuum leaks.
- 3) Keep hands, clothing and feet away from the ends of the hose and pipes. Should you loose any items into the house; **DO NOT TRY TO RETRIEVE IT.** Allowing any body part to be pulled into the vacuum hose could be deadly.
- 4) Always follow confined space procedures when entering a confined area.
- 5) When working above the ground, you must follow the fall protection plan.
- 6) Do not operate vacuum truck RPM higher than what is needed to perform the job at hand; this could lead to damage of the vacuum hose and filters in the bag house.

- 7) Install in the vacuum line, a mechanical relief valve (pop-off valve). The mechanical relief valve will reduce and/or eliminate the possibility of an operator being injured by the vacuum hose, which could pull the operator or their loose clothing into the hose. The relief valve can be used in a 4 inch, 6 inch and 8 inch lines and will provide vacuum relief up to 27" of mercury.
- 8) When equipment is under vacuum pressure, the operator shall never leave person(s) handling the vacuum hose unattended.
- 9) Visual contact must always be present when possible between the operator and the person(s) handling the vacuum hose. When performing the daily safety meeting document what procedures will be used to maintain this contact.
- 10) If visual contact is not feasible, other methods will be used, an air horn system, two-way radio communications, a safety monitor and/or a hand held remote control system held by the person vacuuming. A person can press a switch and shut down the vacuum truck if there are any problems.
- 11) Any system used to notify the operator of the vacuum truck will be tested before work begins.

Supervisor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Employee's Signature \_\_\_\_\_ Date \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Boiler Flange Gasket Removal Method

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
2. Review at initial safety meeting: Operation of reciprocal saws requires safety glassed at all times during operation!!

***PERSONAL PROTECTIVE EQUIPMENT:***

The following personal protective equipment will be worn until a site-specific negative exposure assessment is obtained.

1. Disposable polypropylene coveralls.
2. 1/2 face air purifying respirator with HEPA cartridges.
3. Safety glasses.
4. Disposable cloth gloves

***PROPER REMOVAL STEPS:***

1. This work is to be completed inside an existing negative pressure mini enclosure installed for Class I removal of TSI.
2. Thoroughly pre-wet the gasket with amended water, and then scrape the gasket clean with a sharp putty knife.
3. Immediately place all waste in two layer 6ml disposal bags and place in a disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Class II Removal of Asphalt Asbestos Roofing, Mastic on rolled or Tab Roofing from Roof

**PRE-WORK SAFETY REQUIREMENTS:**

1. This work activity requires a site specific fall protection plan! Make sure one is on site before beginning roofing removal.
2. Review site specific fall protection plan before any removal begins at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.
3. Fall protection must be in place and inspected by IRSE Project Manager prior to working on roof.

**PERSONAL PROTECTIVE EQUIPMENT:**

1. Disposable polypropylene coveralls or
2. Cloth coveralls
3. 1/2 face air purifying respirator purple (HEPA) filter cartridges.
4. Safety glasses.
5. Disposable cloth gloves.

**PROPER REMOVAL STEPS:**

1. Lay 10 - 20 ft. drop sheet extending from base of structure to work area perimeter.
2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
3. Remove the material as intact as possible.
4. Roofing must be removed as **wet as is feasible**.
  - Use water carefully.
  - Using water on pitched roofs creates a slip and fall hazard, use only light wetting and follow all fall protection guidelines.
5. Control dust by using effective methods of lowering roofing debris to the disposal container.
  - A. Lower unbagged /unwrapped ACM immediately to the ground via dust tight chute never allow unbagged roofing to accumulate on the roof, or:
  - B. Bag or wrap ACM roofing in poly sheeting while it is on the roof. All bagged or wrapped waste must be in the waste disposal transportation container or cube van no later than the end of the workshift.
6. Unwrapped roofing must be placed in a lined, closed, covered dumpster or truck.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_



IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Class II Roof putty Sealant Removal

***PRE-WORK SAFETY REQUIREMENTS:***

1. *This work activity requires a site-specific fall protection plan!* Make sure one is on site before beginning roofing removal.
2. *Review site-specific fall protection plan before any removal begins* at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.

***PERSONAL PROTECTIVE EQUIPMENT:***

The following personal protective equipment will be worn until a negative exposure assessment can be made.

1. 1/2 face air purifying respirator.
2. Safety glasses.
3. Disposable cloth gloves.
4. Disposable cloth coveralls.

***PROPER REMOVAL STEPS:***

1. Keep putty moist during removal and demolition activities.
2. Keep putty intact during removal and demolition activities.
3. Wet and separate putty using manual methods after it is exposed.
4. Remove putty intact with the metal roofing, and wrap immediately or place in lined dumpster for storage and transportation.
5. If putty needs to be separated from metal roofing, use a flat sharp hand tool and place putty immediately into asbestos disposal bags.
5. All Bagged or wrapped waste must placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena, Montana

Metalbestos Siding and Roofing Removal Methods

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: Cutting, abrading or sanding metalbestos panels is prohibited.
2. Review at initial safety meeting: Intentionally breaking metalbestos panels is prohibited.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. Disposable polypropylene coveralls.
2. 1/2 face air purifying respirator.
3. Safety glasses.
4. Disposable cloth gloves.

***PROPER REMOVAL STEPS:***

1. Lay 10 - 20 ft. drop sheet extending from base of panel surface to work area perimeter.
2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
3. Wet each panel or shingle before removal.
4. Cut nails with flat sharp hand tool.
5. Carefully remove wet shingle or panel to minimize breakage
6. Immediately lower panels or shingles to the ground.
7. Immediately bag or wrap CAB in labeled 6ml poly sheeting. All bagged or wrapped waste must placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena, Montana

Vacuum Lead Dust Cleaning from inside of the Blast Furnace Flue

**PRE-WORK SAFETY REQUIREMENTS:**

1. Review at safety meeting: Workers will not eat, drink, smoke, or apply cosmetics inside the lead control work area. These activities are prohibited until the employee has left the lead control work area, passed through the hygiene facility and washed thoroughly.
2. Review at safety meeting: No employee will be allowed to enter the demarcated area without attending a Lead in Construction class that meets the requirements of 29 CFR 1926.62 and WAC 296-62-054 through 05427.

**WORK AREA PREPARATION:**

1. All work under these procedures will take place within a demarcated lead control area. The boundaries of the work area will be clearly visible. 3" Barrier tape and caution signs will meet specifications called for in 29 CFR 1926.62.
2. Prepare work area by installing 6 ml drop sheets at the entrance to the work area.
3. Seal doors, install barriers to create negative pressure enclosure and prohibit migration of lead dust beyond lead control area.
4. Install Hygiene station for hand washing prior to meals, breaks, and leaving the work area.

**PERSONAL PROTECTIVE EQUIPMENT:**

1. Until exposure assessment determines worker exposure levels to be below the action level of 30ug/m<sup>3</sup> (averaged over an eight hour period) all personnel performing scraping or brushing operations will wear the following personal protective equipment:
  - 1/2 face air purifying respirator
  - Tyvek coveralls
  - Safety goggles or glasses
  - Disposable cloth work gloves
  - Ear protection
2. When results of exposure assessment are below 15 ug/m<sup>3</sup>, workers will wear the following personal protective equipment:
  - Re-usable cloth coveralls.
  - Re-usable cloth gloves.
  - 1/2 face air purifying respirator.
  - Safety glasses or goggles

### **REMOVAL PROCEDURES:**

1. Personal protective equipment, work boots, and disposable cloth coveralls will be vacuumed and left within the work area before proceeding to the **hygiene facilities** (hand and face wash station). Until exposure assessment indicates airborne lead concentrations below 30ug/m3, a thorough hand and face wash will be performed immediately following removal of protective clothing and upon leaving the lead control area.
2. A remote three stage decon will be provided for change area, its use is required. *Storage areas for your street clothes will be provided.*
3. The industrial vacuum will be used to clean up the lead dust through out the flue, IRSE employees will also use small brushes to remove the material from the interior top portion of the flue that is not reachable with the vacuum attachments.
4. In the unlikely event that airborne lead levels reach 1/2 of the action level(15ug/m3), all work will stop until work practices can be modified, and or engineering controls can be installed to reduce airborne lead levels.

In the unlikely event that airborne levels of lead exceed 30ug/m3 all effected employees will be required to participate in blood sampling and analysis for lead and zinc protoporphirin levels. Each employee receiving blood monitoring shall be notified of the results within five working days after IRS receives the results. (See IRS Medical surveillance program for lead removal, employee orientation)

5. Eight hour representative personnel sampling will be conducted for the task or tasks within the work area that generate the most airborne lead concentrations. All monitoring and analysis will be performed according to NIOSH Method 7082 or equivalent. All employees will be notified of the results of this analysis within five days of the exposure assessment. Exposure assessments will continue as conditions change throughout cleaning project.

### **CLEAN UP AND DISPOSAL PROCEDURES:**

1. Clean up all lead dust debris by the end of each workshift. At no time will visible dust debris be tracked or allowed to migrate from the lead control work area.
2. Place all lead dust waste in labeled and designated disposal drum prior to the end of each workshift.
3. All drums must be dated, sealed, labeled and stored in the designated hazardous waste storage area.

Supervisor/Trainer \_\_\_\_\_

Date \_\_\_\_\_

Employee \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Flange gasket and packing rope removal -- furnace seals and joints and expansion joints,

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
2. Review at initial safety meeting: Operation of reciprocal saws requires safety glassed at all times during operation!!

***PERSONAL PROTECTIVE EQUIPMENT:***

The following personal protective equipment will be worn until a site specific negative exposure assessment is obtained.

1. Disposable polypropylene coveralls.
2. 1/2 face air purifying respirator with HEPA cartridges.
3. Safety glasses.
4. Disposable cloth gloves

***PROPER REMOVAL STEPS:***

1. Post 3" DANGER ASBESTOS barrier tape at work and DANGER ASBESTOS signs at all approaches and access points to the regulated work area to restrict access of untrained personnel
2. Set up a mini enclosure around the abatement area.
3. Wet any exposed lining or gasket material. Wrap tightly and securely with 6 ml poly and duct tape. Cut entire fitting or duct out by cutting pipe or on each side of fitting with reciprocating saw or band saw, leaving gasket in place and intact.
4. Immediately place all waste in two layer 6ml disposal bags and place in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Cutting through VAT and asbestos cutback mastic on wood sub-flooring

This activity involves making a Class II building material friable *requires specific engineering controls, respirator protection and a regulated work area. Personnel air monitoring and daily exposure assessment is required.* Methods of compliance such as HEPA vacuums, wet methods and prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: power tool cutting, abrading or sanding sheet flooring prohibited by Class II workers.
2. VAT and mastic contain asbestos and should be kept wet during cutting activities.
3. High speed cutting or abrasive disc saws must be equipped with point of cut vacuum hose attached to HEPA vacuum.
4. Dry sweeping, shoveling of other dry clean up of dust and debris is not allowed.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. Full bodied polypropylene coveralls.
2. Full face piece supplied air respirator operated in pressure demand mode, equipped with HEPA filter egress cartridges will be used until exposure assessment provides for downgrading to lesser protection.
3. Powered air-purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 10 f/cc (TWA).
4. Full face piece air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 5 f/cc (TWA).
5. 1/2 face air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 1 f/cc (TWA).
6. Disposable cloth gloves.

***PROPER REMOVAL STEPS:***

1. Seal all critical barriers at work area perimeter.
2. Post full size DANGER ASBESTOS sign at work area entrance to restrict access of untrained personnel.
3. Lay drop sheet at entrance to work area for clean area.
4. Score, wet and remove single strip of vinyl floor tile (VAT) at cutting point.
5. Wet wood / asbestos mastic surface with amended water.
6. Cut through wood substrate with high speed cutting or abrasive disc saw equipped with point of cut vacuum hose attached to HEPA vacuum.
7. Immediately clean up all wood, mastic and tile dust with HEPA Vacuum.  
Area must be cleaned of all debris prior to flooring removal by Class II workers.
8. All bagged, wrapped waste must placed in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisor's signature \_\_\_\_\_ Date \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena, Montana

Metalbestos Siding and Roofing Removal Methods

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: Cutting, abrading or sanding metalbestos panels is prohibited.
2. Review at initial safety meeting: Intentionally breaking metalbestos panels is prohibited.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. Disposable polypropylene coveralls.
2. 1/2 face air purifying respirator.
3. Safety glasses.
4. Disposable cloth gloves.

***PROPER REMOVAL STEPS:***

1. Lay 10 - 20 ft. drop sheet extending from base of panel surface to work area perimeter.
2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
3. Wet each panel or shingle before removal.
4. Cut nails with flat sharp hand tool.
5. Carefully remove wet shingle or panel to minimize breakage
6. Immediately lower panels or shingles to the ground.
7. Immediately bag or wrap CAB in labeled 6ml poly sheeting. All bagged or wrapped waste must be placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_



**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena, Montana

Vacuum Lead Dust Cleaning from inside of the Blast Furnace Flue

**PRE-WORK SAFETY REQUIREMENTS:**

1. Review at safety meeting: Workers will not eat, drink, smoke, or apply cosmetics inside the lead control work area. These activities are prohibited until the employee has left the lead control work area, passed through the hygiene facility and washed thoroughly.
2. Review at safety meeting: No employee will be allowed to enter the demarcated area without attending a Lead in Construction class that meets the requirements of 29 CFR 1926.62 and WAC 296-62-054 through 05427.

**WORK AREA PREPARATION:**

1. All work under these procedures will take place within a demarcated lead control area. The boundaries of the work area will be clearly visible. 3" Barrier tape and caution signs will meet specifications called for in 29 CFR 1926.62.
2. Prepare work area by installing 6 ml drop sheets at the entrance to the work area.
3. Seal doors, install barriers to create negative pressure enclosure and prohibit migration of lead dust beyond lead control area.
4. Install Hygiene station for hand washing prior to meals, breaks, and leaving the work area.

**PERSONAL PROTECTIVE EQUIPMENT:**

1. Until exposure assessment determines worker exposure levels to be below the action level of 30ug/m3 (averaged over an eight hour period) all personnel performing scraping or brushing operations will wear the following personal protective equipment:
  - 1/2 face air purifying respirator
  - Tyvek coveralls
  - Safety goggles or glasses
  - Disposable cloth work gloves
  - Ear protection
2. When results of exposure assessment are below 15 ug/m3, workers will wear the following personal protective equipment:
  - Re-usable cloth coveralls.
  - Re-usable cloth gloves.
  - 1/2 face air purifying respirator.
  - Safety glasses or goggles

### **REMOVAL PROCEDURES:**

1. Personal protective equipment, work boots, and disposable cloth coveralls will be vacuumed and left within the work area before proceeding to the **hygiene facilities** (hand and face wash station). Until exposure assessment indicates airborne lead concentrations below 30ug/m<sup>3</sup>, a thorough hand and face wash will be performed immediately following removal of protective clothing and upon leaving the lead control area.
2. A remote three stage decon will be provided for change area, its use is required. Storage areas for your street clothes will be provided.
3. The industrial vacuum will be used to clean up the lead dust through out the flue, IRSE employees will also use small brushes to remove the material from the interior top portion of the flue that is not reachable with the vacuum attachments.
4. In the unlikely event that airborne lead levels reach 1/2 of the action level(15ug/m<sup>3</sup>), all work will stop until work practices can be modified, and or engineering controls can be installed to reduce airborne lead levels.

In the unlikely event that airborne levels of lead exceed 30ug/m<sup>3</sup> all effected employees will be required to participate in blood sampling and analysis for lead and zinc protoporphirin levels. Each employee receiving blood monitoring shall be notified of the results within five working days after IRS receives the results. (See IRS Medical surveillance program for lead removal, employee orientation)

5. Eight hour representative personnel sampling will be conducted for the task or tasks within the work area that generate the most airborne lead concentrations. All monitoring and analysis will be performed according to NIOSH Method 7082 or equivalent. All employees will be notified of the results of this analysis within five days of the exposure assessment. Exposure assessments will continue as conditions change throughout cleaning project.

### **CLEAN UP AND DISPOSAL PROCEDURES:**

1. Clean up all lead dust debri by the end of each workshift. At no time will visible dust debris be tracked or allowed to migrate from the lead control work area.
2. Place all lead dust waste in labeled and designated disposal drum prior to the end of each workshift.
3. All drums must be dated, sealed, labeled and stored in the designated hazardous waste storage area.

Supervisor/Trainer\_\_\_\_\_

Date\_\_\_\_\_

Employee\_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Flange gasket and packing rope removal – furnace seals and joints and expansion joints,

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
2. Review at initial safety meeting: Operation of reciprocal saws requires safety glassed at all times during operation!!

***PERSONAL PROTECTIVE EQUIPMENT:***

The following personal protective equipment will be worn until a site specific negative exposure assessment is obtained.

1. Disposable polypropylene coveralls.
2. 1/2 face air purifying respirator with HEPA cartridges.
3. Safety glasses.
4. Disposable cloth gloves

***PROPER REMOVAL STEPS:***

1. Post 3" DANGER ASBESTOS barrier tape at work and DANGER ASBESTOS signs at all approaches and access points to the regulated work area to restrict access of untrained personnel
2. Set up a mini enclosure around the abatement area.
3. Wet any exposed lining or gasket material. Wrap tightly and securely with 6 ml poly and duct tape. Cut entire fitting or duct out by cutting pipe or on each side of fitting with reciprocating saw or band saw, leaving gasket in place and intact.
4. Immediately place all waste in two layer 6ml disposal bags and place in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Date \_\_\_\_\_

**IRS ENVIRONMENTAL, INC.**  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT.

Cutting through VAT and asbestos cutback mastic on wood sub-flooring

This activity involves making a Class II building material friable *requires specific engineering controls, respirator protection and a regulated work area. Personnel air monitoring and daily exposure assessment is required.* Methods of compliance such as HEPA vacuums, wet methods and prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

***PRE-WORK SAFETY REQUIREMENTS:***

1. Review at initial safety meeting: power tool cutting, abrading or sanding sheet flooring prohibited by Class II workers.
2. VAT and mastic contain asbestos and should be kept wet during cutting activities.
3. High speed cutting or abrasive disc saws must be equipped with point of cut vacuum hose attached to HEPA vacuum.
4. Dry sweeping, shoveling of other dry clean up of dust and debris is not allowed.

***PERSONAL PROTECTIVE EQUIPMENT:***

1. Full bodied polypropylene coveralls.
2. Full face piece supplied air respirator operated in pressure demand mode, equipped with HEPA filter egress cartridges will be used until exposure assessment provides for downgrading to lesser protection.
3. Powered air-purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 10 f/cc (TWA).
4. Full face piece air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 5 f/cc (TWA).
5. 1/2 face air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 1 f/cc (TWA).
6. Disposable cloth gloves.

***PROPER REMOVAL STEPS:***

1. Seal all critical barriers at work area perimeter.
2. Post full size DANGER ASBESTOS sign at work area entrance to restrict access of untrained personnel.
3. Lay drop sheet at entrance to work area for clean area.
4. Score, wet and remove single strip of vinyl floor tile (VAT) at cutting point.
5. Wet wood / asbestos mastic surface with amended water.
6. Cut through wood substrate with high speed cutting or abrasive disc saw equipped with point of cut vacuum hose attached to HEPA vacuum.
7. Immediately clean up all wood, mastic and tile dust with HEPA Vacuum.  
Area must be cleaned of all debris prior to flooring removal by Class II workers.
8. All bagged, wrapped waste must placed in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisor's signature \_\_\_\_\_ Date \_\_\_\_\_

IRS ENVIRONMENTAL, INC.  
ASARCO Phase 4 Building Cleaning and Demolition  
East Helena MT

Window putty removal, intact removal methods

***PRE-WORK SAFETY REQUIREMENTS:***

1. *This work activity may require a site specific fall protection plan!* Make sure one is on site before beginning removal.
2. *Review site specific fall protection plan before any removal begins* at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.
3. *Review at initial safety meeting:* Cutting, abrading or sanding window putty is prohibited.
4. *Review at initial safety meeting:* Intentionally breaking Windows and Putty is prohibited.
5. This activity has a high possibility for cuts and lacerations. If necessary, tape windows to minimize shatter. Always wear safety glasses during window removal activities.
6. This activity requires a barricade to control access below window removal.  
*Eliminate risk of people walking below window removal operations!!*

***PERSONAL PROTECTIVE EQUIPMENT:***

1. 1/2 face air purifying respirator.
2. Safety glasses.
3. Disposable cloth gloves.

***PROPER REMOVAL STEPS:***

1. Lay 10 - 20 ft. drop sheet extending from base of building to work area perimeter.
2. Tape glass to minimize shatter.
3. Wet each widow before removal.
4. Remove and set aside trim board and shims.
5. Carefully remove wet window to minimize breakage
6. Immediately lower windows to the ground, scaffold or manlift surface, either manually or via dust tight chute.
7. Placed whole intact windows in a lined box, locked enclosed transportation container no later than the end of the work shift.

Employees signature \_\_\_\_\_ Date \_\_\_\_\_

Supervisors signature \_\_\_\_\_ Dare \_\_\_\_\_

## **Appendix D**

### **Fall Protection Plan**

# FALL PROTECTION WORK PLAN

A written fall protection work plan must be implemented by each employer on a job site where a fall hazard of 10 feet or greater exists, in accordance with Department of Labor and Industries, WISHA Regulations. The plan must be specific for each work site.

**THIS WORK PLAN WILL BE AVAILABLE ON THE JOB SITE FOR INSPECTION.**

Attached is a sample of a model fall protection work plan that may be filled out by each employer who has employees exposed above 10 feet. The following steps will help you fill out your plan.

## 1. FILL OUT THE SPECIFIC JOB INFORMATION.

Company Name:

IRS ENVIRONMENTAL OF WA

Job Name:

ASARCO Phase 4 Building Cleaning and Demolition

Date:

April 17, 2007

Job Address:

100 Smelter Road

City:

East Helena

Job Foreman:

Mark Kazemba

Jobsite Phone:

509-844-4267

## 2. FALL HAZARDS IN THE WORK AREA

INCLUDE LOCATIONS AND DIMENSIONS FOR HAZARDS

Elevator shaft: N/A

Stairwell: Stairs along the outside of the building coming from the floors above.

Leading edge: N/A

Window opening: When windows have been removed from the jam

Outside static line: N/A

Roof eave height: Various sizes

Perimeter edge: working from roof

Roof perimeter dimensions: N/A

Other fall hazards in the work area: Working from the man-basket of a all terrain articulating man lift and scissors lifts



### 3. METHOD OF FALL ARREST OR FALL RESTRAINT

(For fall protection equipment include details, such as manufacturer etc.)

Full body harness:

Used while working in the manlift

Body belt (Restraint only):

N/A

Lanyard:

Will be attached to anchor point with in the man lift basket

Dropline:

N/A

Lifeline:

Working from the roof

Restraint line: Working on flat roofs

Horizontal lifeline:

N/A

Rope grab:

Working from roof – safety lines

Deceleration device:

Used with conjunction with lanyard

Shock absorbing lanyard:

Will be attached to anchor point with in the man lift basket

Locking snap hooks:

Used on the ends of the lanyards

Safety nets:

N/A

Guard rails:

N/A

Anchorage points:

The approved by the manufacture of the manlift spot to attach a lanyard wit ha locking snap hook

Catch platform:

N/A

Scaffolding platform:

N/A

Safety monitor:

To be used on the roofs

Name of monitor, if used:

Other:

---

---

---

---

#### 4. ASSEMBLY, MAINTENANCE, INSPECTION, DISASSEMBLY PROCEDURE

Assembly and disassembly of all equipment will be done according to manufacturers' recommended procedures.

(Include copies of manufacturer's data for each specific type of equipment used.)

Specific types of equipment on the job are:

Full body harnesses, lanyards and manlift

A visual inspection of all safety equipment will be done daily or before each use, as stated in the Employee Training Packet. Any defective equipment will be tagged and removed from use immediately. The manufacturer's recommendations for maintenance and inspection will be followed.

#### 5. HANDLING, STORAGE & SECURING OF TOOLS AND MATERIAL

Toe boards will be installed on all scaffolding to prevent tools and equipment from falling from scaffolding.

Other specific handling, storage and securing is as follows:

Scaffolding will not be used as of this time on site, if scaffolding is used the fall protection work plan will be amended to reflect the use of scaffolding.

## 6. OVERHEAD PROTECTION

Hard hats are required on all job sites with the exception of those that have no exposure to overhead hazards. Warning signs will be posted to caution of existing hazards whenever they are present. In some cases, debris nets may be used if a condition warrants additional protection.

Additional overhead protection will include:

No additional protection will be required at this time,

## 7. INJURED WORKER REMOVAL

Normal first aid procedures should be performed as the situation arises. If the area is safe for entry, the first aid should be done by a foreman or other certified individual.

Initiate Emergency Services – Dial 911 (where available)

Phone location: Job office and cell phone on Supervision's

First aid location: Company truck, decon trailer and company trailer, job box

Elevator location: N/A

Crane location: N/A

Other: \_\_\_\_\_ Location: \_\_\_\_\_

Rescue considerations. When personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders, or other rescue equipment should be evaluated. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices that have descent capability.

Describe methods to be used for the removal of the injured worker(s):

Injured worker will not be moved if the injured worker is safe from harms way. If the worker needs to be moved all precautions will be taken to not injury the worker anymore than what they are already.

## 8. TRAINING AND INSTRUCTION PROGRAM

All new employees will be given instructions on the proper use of fall protection devices before they begin work. They will sign a form stating they have been given this information. This form becomes part of the employee's personnel file.

The written fall protection work plan will be reviewed before work begins on the job site. Those employees attending will sign below. The fall protection equipment use will be reviewed regularly at the weekly safety meetings.

Date: \_\_\_\_\_

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Foreman or Job Superintendent: \_\_\_\_\_

Prior to permitting employees into areas where fall hazards exist, all employees must be trained regarding fall protection work plan requirements. Inspection of fall protection devices/systems must be made to ensure compliance with WAC 296-155-24

## **Appendix E**

### **Notifications**

# APPLICATION FOR A MONTANA ASBESTOS PROJECT PERMIT AND NESHAP DEMOLITION/RENOVATION NOTIFICATION

TYPE OF APPLICATION/PERMIT (See Instructions)										ACCOUNTING CODE: 5748332 / 502702 / 02202														
<input type="checkbox"/> Project Permit		<input type="checkbox"/> Project Permit Revision		<input type="checkbox"/> Courtesy Notification (NESHAP)		<input type="checkbox"/> Annual Permit				<input type="checkbox"/> NESHAP Notification		<input type="checkbox"/> NESHAP Notification Revision		<input type="checkbox"/> Annual Permit Amendment		<input type="checkbox"/> Annual Permit w/Contractor								
TYPE OF NOTIFICATION																								
<input type="checkbox"/> Renovation (R)		<input type="checkbox"/> NESHAP Demo/Reno		<input type="checkbox"/> Ordered Demolition (O)		<input type="checkbox"/> Transport (T)				<input type="checkbox"/> Demolition (M)		<input type="checkbox"/> Courtesy (C)		<input type="checkbox"/> Emergency Renovation (E)		<input type="checkbox"/> Disposal (D)								
<input type="checkbox"/> Annual		(For Annual Permit Holders)		Annual Permit		MTF																		
ASBESTOS PROJECT CONTRACTOR (Operator)																								
Asbestos Project Contractor, Individual or Company Name																								
Mailing Address					City					County					State					Zip				
Telephone Number					Fax Number					Contractor Contact Person (First and Last Name)														
On-Site Project Contractor/Supervisor					Contractor/Supervisor Accreditation Number					Expiration Date														
DEMOLITION/RENOVATION CONTRACTOR (Operator)																								
Demolition/Renovation Contractor, Individual or Company Name																								
Mailing Address					City					State					Zip					County				
Telephone Number					Fax Number					Contractor Contact Person (First and Last Name)														
SITE INFORMATION																								
Building Name / Site																								
Location Address					City					State					Zip					County				
Site Telephone Number					Location Contact Person (First and Last Name)																			
Building Size (sq. ft.)		Number of Floors		Age of Site in Years		Latitude		Longitude		Township		Range		Section										
SITE/BUILDING OWNER																								
Owner Name																								
Mailing Address					City					State					Zip					County				
Telephone Number					Contractor Contact Person for Owner (First and Last Name)																			
LOCATION PRESENT USE*																								
* Commercial ~ Hospital ~ Industrial ~ Miscellaneous ~ Office ~ Public Building Residence ~ School ~ Ship/Boat ~ University/College ~ Vacant																								
<input type="checkbox"/> C	<input type="checkbox"/> H	<input type="checkbox"/> I	<input type="checkbox"/> M	<input type="checkbox"/> O	<input type="checkbox"/> P	<input type="checkbox"/> R	<input type="checkbox"/> S	<input type="checkbox"/> B	<input type="checkbox"/> U	<input type="checkbox"/> V														
LOCATION PRIOR USE*																								
<input type="checkbox"/> C	<input type="checkbox"/> H	<input type="checkbox"/> I	<input type="checkbox"/> M	<input type="checkbox"/> O	<input type="checkbox"/> P	<input type="checkbox"/> R	<input type="checkbox"/> S	<input type="checkbox"/> B	<input type="checkbox"/> U	<input type="checkbox"/> V														
PRE-RENOVATION/DEMOLITION ASBESTOS INSPECTION INFORMATION																								
Is Asbestos Present?					<input type="checkbox"/> Yes <input type="checkbox"/> No					Date of Inspection:														
Printed Name of Inspector Who Performed Inspection					Accreditation Number					Expiration Date														
TYPE OF AND APPROXIMATE AMOUNT OF ASBESTOS MATERIAL																								
RACM to be Abated (See Instructions)		Non-Friable ACM to be removed		Non-Friable ACM not to be abated		Amount and unit of measurement																		
RACM		CAT I		CAT II		CAT I		CAT II		Amount		Measurement												
Material No. 1												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
Material No. 2												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
Material No. 3												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
Material No. 4												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
Material No. 5												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
Material No. 6												<input type="checkbox"/> SF <input type="checkbox"/> LF <input type="checkbox"/> CF												
SCHEDULED DATES FOR ASBESTOS ABATEMENT										SCHEDULED DATES FOR DEMOLITION/RENOVATION														
Start Date (mm/dd/yy)					Complete Date (mm/dd/yy)					Start Date (mm/dd/yy)					Complete Date (mm/dd/yy)									

PROJECT DESIGN INFORMATION					
Print Name of Project Designer (PD)			(Accreditation Number/Exp. Date)		
<b>RACM WASTE TRANSPORTER</b>			<input type="checkbox"/> Check if same as Abatement Contractor		
Contractor, Individual or Company Name					
Mailing Address		City	State	Zip	
Telephone Number		Fax Number	Contractor Contact Person (First and Last Name)		
RACM WASTE DISPOSAL SITE					
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <input type="checkbox"/> Allied Waste Systems of Montana Missoula Landfill  <input type="checkbox"/> Butte Silver Bow Government Landfill  <input type="checkbox"/> City of Billings Solid Waste Division Landfill  <input type="checkbox"/> City of Hardin Class II Landfill  <input type="checkbox"/> City of Malta Landfill  <input type="checkbox"/> City of Shelby Landfill  <input type="checkbox"/> Coral Creek Landfill  <input type="checkbox"/> Daniels County Commissions Scobey Landfill  <input type="checkbox"/> Flathead County Solid Waste District Kalispell Landfill  <input type="checkbox"/> High Plains Sanitary Landfill Site 1 - Great Falls/Floweree </div> <div style="width: 48%;"> <input type="checkbox"/> Libby Class II Landfill  <input type="checkbox"/> Miles City Area Solid Waste Dist Landfill  <input type="checkbox"/> Northern MT Joint Refuse Disposal Dist Conrad Landfill  <input type="checkbox"/> Park County Refuse Disposal Dist Livingston Landfill  <input type="checkbox"/> Richland County Solid Waste Dist Sidney Landfill  <input type="checkbox"/> Sheridan County Solid Waste Dist Plentywood Landfill  <input type="checkbox"/> Valley County Refuse Dist Glasgow Landfill  <input type="checkbox"/> Valleyview Class II CCSS Valeris Landfill  <input type="checkbox"/> Other: _____ </div> </div>					
THIS SECTION APPLIES TO FACILITY DEMOLITIONS/RENOVATIONS					
<i>I certify that the above information is correct and that a State-accredited asbestos inspector inspected the facility for asbestos prior to demolition/renovation. This Notice must be submitted to the Department at least 10 days prior to the start of work.</i>					
Printed Name / Signature			Date		
THIS SECTION APPLIES TO ASBESTOS PROJECTS					
<i>I certify that all work performed pursuant to the authorization of the Asbestos Abatement Project Permit will be performed in accordance with 29 CFR 1926.1101, 40 CFR 763 subpart E, 40 CFR 763.120, 40 CFR 763.121, 40 CFR 763.124, 40 CFR part 61 subpart M, §§ 75-2-501 through -519, MCA, and ARM 17.74.301 through 406. In addition, I hereby certify that asbestos-containing waste materials removed during this project will be transported properly and disposed of in a State-approved Class II landfill or similar approved asbestos disposal facility.</i>					
Printed Name / Signature			Date		
FOR ASBESTOS PROJECTS PLEASE PROVIDE PER ARM 17.74.355					
<input type="checkbox"/> A. Project design. <input type="checkbox"/> B. List of accredited asbestos personnel with their accreditation ID numbers and expiration dates. <input type="checkbox"/> C. Copy of the contract showing the contract dollar amount for asbestos abatement. <input type="checkbox"/> D. Appropriate fee (see Fee Schedule below).					
<b>CONTRACT VOLUME</b>	<b>FEE</b>	<b>CONTRACT VOLUME</b>	<b>FEE</b>	<b>CONTRACT VOLUME</b>	<b>FEE</b>
\$0-\$500	---	\$7,501-\$10,000	\$417	\$75,001-\$100,000	\$3,627
\$501-\$3,000	\$ 91	\$10,001-\$20,000	\$686	\$100,001-\$250,000	\$6,552
\$3,001-\$5,000	\$201	\$20,001-\$50,000	\$1,531	\$250,001-\$375,000	\$13,416
\$5,001-\$7,500	\$364	\$50,001-\$75,000	\$2,652	Greater than \$375,000	\$20,000
Actual Contract Volume		Fee Amount Enclosed		Check No.	
				<b>DEPOSIT LOG NO.</b>	
<b>Mail completed form and fee to: MT DEQ Asbestos Control Program, 1520 East 6th Avenue, PO Box 200901, Helena, MT 59620-0901</b>					
<i>Mont. Code Ann. § 75-2-503(2) requires the department to issue a permit decision within seven calendar days following receipt of a complete application for asbestos abatement projects which cost \$3000 or less. For projects exceeding \$3000, the estimated time to process and issue a decision is ten working days.</i>					
FOR EMERGENCY RENOVATIONS - APPLICATION MUST BE SUBMITTED WITHIN FIVE DAYS OF NOTIFICATION					
<b>Date of Emergency</b> _____ <div style="display: flex; justify-content: space-around; font-size: small;"> <span>(Start Date)</span> <span>(Complete Date)</span> </div>					
<b>Description of the sudden, unexpected event.</b> _____ _____ _____					
<b>IF DEMOLITION IS ORDERED BY A GOVERNMENT AGENCY, SUBMIT COPY OF GOVERNMENT ORDER</b>					



**Appendix F**  
**Material and Equipment Data**

# **Hako**

## **Minuteman**

### **Series 800 Asbestos Vacuum Systems For Safe Control & Removal of Asbestos and Other Toxic Materials**

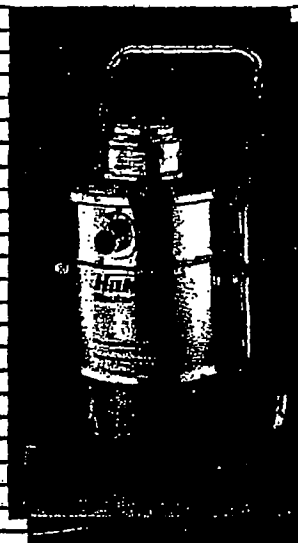
- Wet or Dry Pick-Up
- Portable or Large Capacity
- Electric or Air-Operated
- Painted or Stainless Steel



Back Pack Asbestos Vac



6 Gallon Asbestos Vac



30 or 55



Twin-Powered Asbestos Vac



Air-Powered Asbestos Vac



All units equipped with H.E.P.A. filters with minimum 99.99% efficiency at 0.12 microns.

# Critical Systems

Houston, Texas

(DIVISION OF CRITICAL SYSTEMS, INC.)



## MACH 2

### NEGATIVE PRESSURE SYSTEM

#### FEATURES:

- \*HEPA Fan Safe Switch
- \*Four Easy Lift Handles
- \*Cumulative Hour Meter
- \*Static Pressure Gauge
- \*Speed Selector Switch
- \*12" Dia. Discharge
- \*4" Heavy Duty Swivel Casters
- \*18 Gauge Stainless Steel or
- \*.090 inch Aluminum Construction
- \*Intake Adaptor Available

#### OPTIONAL ALARM SYSTEM

- \*Normal (Run) - Light
- \*High Pressure (Filter Loading) - Audible & Visual Warning
- \*Low Pressure (Blocked Discharge, Filter Rupture & Shutdown) - Audible & Visual Warning

#### SPECIFICATIONS:

- \*Two Speeds : 2100 CFM 1411 CFM
- \*Dimensions : 38" L x 37.5" H x 29" W
- \*Weight : 180 lbs. with filters - Aluminum  
225 lbs. with filters - Stainless
- \*Motor : 1 3/4Hp - Thermally Protected
- \*Power : 110 / 115 Volts / 60 Hz
- \*Full Load Amps : 15.8 Amps
- \*Circuit Protection: 20 Amps
- \*Filters : 24" x 24" x 1" Primary  
24" x 24" x 2" Secondary  
24" x 24" x 11 1/2" HEPA



In a sticky situation? Then turn to...

# ABATIX®

We've got what  
you need for  
adhesives



**\$88.00/case**

## 3M

3M2090 Blue  
Painters Tape  
&  
3M2020 Masking

1" 1.5" 2" 3"  
Call for Pricing



TYC827 – White  
Poly Tape **\$110.50**  
2" 24/case



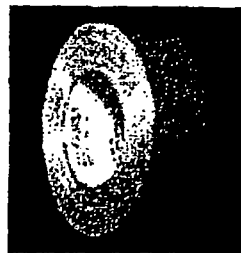
ABATIX® Brand  
Duct Tape – Case  
Quantities Only  
2" 24/case or  
3" 16/case



Nashua 398 2" 24/cs **\$94.50**  
& 3" 16/case **\$94.50** Silver

Premium 357 2" Silver **\$168.75**  
Case Quantities Only

Abatix Corp  
1808 B St NW  
Auburn WA  
98001



TYC809  
Yellow Vinyl  
2" 24/case  
**\$70.00**

**Toll Free 1-800-500-8355**

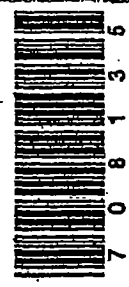
Prices good only through month of May

# HEAVY-DUTY ADHESIVE SPRAY

- Wide Web Spray
- Temporary or Permanent Bonds
- No Chlorinated Solvents
- No Ozone Depleters

## DANGER

Extremely Flammable. Contains Hexane and Acetone. Use with adequate ventilation. Keep away from heat, sparks, open flame or other ignition sources. Avoid inhalation of spray mist or vapors. If overcome, move patient to fresh air. Call a physician immediately. Avoid contact with eyes and skin. In case of eye contact, flush immediately with water and continue for 15 minutes. If irritation persists, see a physician. For skin contact, wash with soap and water. If irritation persists, call a physician immediately. Harmful or fatal if swallowed. Do not take internally. If swallowed, do not induce vomiting. Contact a physician immediately. Contents under pressure. Do not puncture or incinerate container. Do not store at temperatures above 120°F. KEEP OUT OF REACH OF CHILDREN.



## HEAVY DUTY ADHESIVE SPRAY

This wide web spray adhesive is one of the highest performance aerosol adhesives available. For both temporary or permanent bonding, this high solids product is ideal for uneven or porous surfaces and weight materials. Waterproof flexible transparent and non-staining, use this product for your toughest adhesive applications with materials such as leather, cardboard, most plastics, polyethylene sheeting and cloth. Formulated with the environment in mind, this product contains NO CHLORINATED SOLVENTS OR OZONE DEPLETERS. Cleans easily with Mineral Spirits. Not intended for use on vinyl.

### DIRECTIONS

Always shake well before using. Never aim valve at face. Hold can upright and apply adhesive in a side to side motion 10 to 14 inches from surface.  
**TEMPORARY BONDS:** Spray surface, allow to tack and apply material to be bonded.  
**PERMANENT BONDS:** Liberally spray both surface and material, allow to tack, then apply.  
**CLEANING SPRAY TIP:** When finished with a particular spray application, always turn can upside down and spray for two seconds to clear valve and prevent clogging. If adhesive accumulates around nozzle wipe clear while wet. If dried in valve opening, remove with degreasing solvent.

**DANGER:** Extremely Flammable. Contains Hexane and Acetone. Use with adequate ventilation. Keep away from heat, sparks, open flame or other ignition sources. Avoid inhalation of spray mist or vapors. If overcome, move patient to fresh air. Call a physician immediately. Avoid contact with eyes and skin. In case of eye contact, flush immediately with water and continue for 15 minutes. If irritation persists, see a physician. For skin contact, wash with soap and water. If irritation persists, call a physician immediately. Harmful or fatal if swallowed. Do not take internally. If swallowed, do not induce vomiting. Contact a physician immediately. Contents under pressure. Do not puncture or incinerate container. Do not store at temperatures above 120°F. KEEP OUT OF REACH OF CHILDREN.

08/98

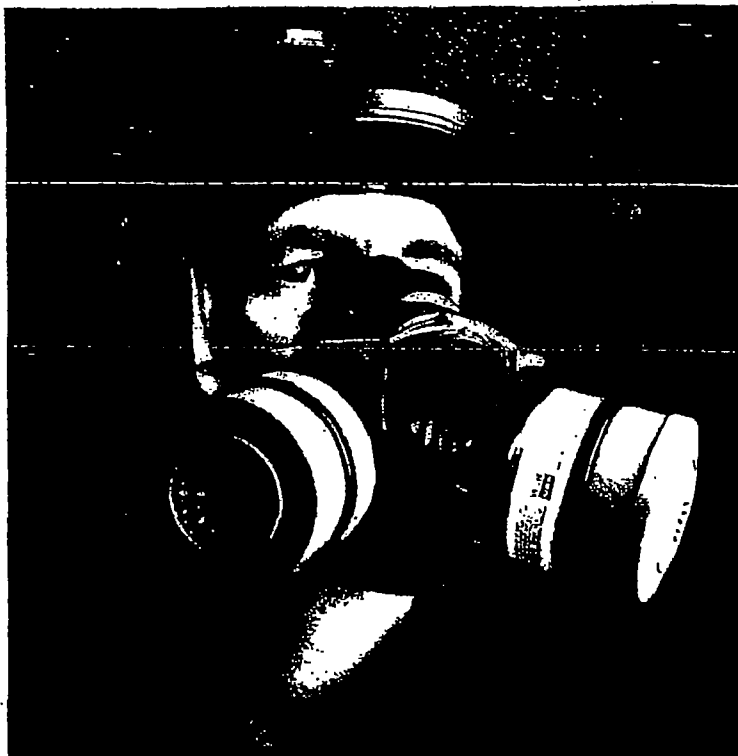
### Manufactured for ABATIX ENVIRONMENTAL CORP

Dallas, TX 75227	214-381-1148		
Houston, TX	713-956-2062	Hayward, CA	510-471-5997
Santa Fe Springs, CA	310-944-3445	Denver, CO	303-373-1000
Phoenix, AZ	602-437-4993	Kent, WA	208-872-6955

# **NORTH 7600 SERIES FULL FACEPIECE AIR PURIFYING RESPIRATORS**

**NIOSH/MSHA Certified**

The North 7600 Series full facepiece respirators are designed to provide eye, face and respiratory protection while providing optimum comfort. While affording an over 200° field of vision, the hard coated polycarbonate lens protects the wearer's eyes and face against irritating gases, vapors and flying particles. The polycarbonate lens also features optical properties similar to the North 180° Protective Spectacle to minimize distortion and astigmatism.



**7600 Series  
(shown with  
N7500-8 Filters)**

<b>Features</b>	<b>Benefits</b>
Dual flange	Superior fit characteristics. Less inventory and purchasing problems.
Silicone full facepiece	Soft, pliable superior comfort and fit.
Two facepiece sizes, small and medium/large	Comfortable fit for the largest number of respirator wearers.
Chin cup	Positions facepiece properly.
Designed to cover worker's entire face	Worker is provided with eye and face protection from gases, vapors and particles.
Direct cartridge-to-facepiece connection	Secure fit. Creates a cartridge-to-facepiece seal without the use of gaskets.
Cartridges have an inside thread connection	Threads are protected - less likelihood of thread damage.
5 strap head harness and comfortable	Facepiece-to-face seal is effectively maintained.
Oral/nasal cup	Reduces fogging. Lessens "dead-air" space. Standard equipment.
Speaking diaphragm	Easy communication. Standard equipment.
Cast aluminum lens clamps	Secure lens-to-facepiece seal.
Neck strap	Allows wearer to park the respirator when not in use.
Hard coated polycarbonate lens	Excellent optics. Scratch and impact resistant. Meets impact and penetration requirements of ANSI Z87.1-1989.
Wraparound lens	Provides over 200° field of vision. Anti-claustrophobic design.
Lightweight	Adds to comfort, worker acceptance and reduced fatigue. Higher worker productivity.
Certified NIOSH/MSHA	Compliance with OSHA requirement.

## **North Safety Equipment**

# **NORTH 7700 SERIES HALF MASK AIR- PURIFYING RESPIRATORS**

NIOSH/MSHA Certified

The North 7700 Series is the most comfortable half mask respirator available today. What makes it so comfortable? For one thing, the facepiece is made of soft, hypoallergenic silicone rubber. Because silicone rubber's so much more flexible than organic rubber, it conforms to a worker's face. And three facepiece sizes make it much easier to fit your workers.

The North 7700's cradle suspension system also adds to the comfort of this respirator. The North 7700 doesn't slip like respirators with conventional strap systems. The cradle suspension gives an even seal without creating pressure points.

The low profile of the North 7700 gives workers a wide field of vision and room for protective eyewear. Its low inhalation and exhalation resistance makes breathing easier, leaving more energy for production.







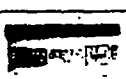
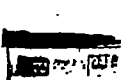




Series 7700  
(Shown with N7500-3 Cartridges)



Features	Benefits
State-of-the-art design and materials	Provides wearers with the best fitting, most comfortable facepiece, thereby improving health and safety.
Silicone facepiece material	Wearer comfort. Readily conforms to facial features and doesn't harden with age. Easy to clean. Durable. Stands up to repeated cleanings better than any other facepiece material. Resists distortion, ensuring a better fit, time after time.
Contoured sealing flange	The most comfortable, best fitting half mask facepiece available. Eliminates discomfort caused by pressure points on facial nerves. Design of nose area provides excellent fit and comfort.
Extended side flanges	Provide best possible seal during talking or other facial motions.
Low dead-air space	Improves worker comfort by limiting "re-breathing" of exhaled air.
Three overlapping facepiece sizes	Comfortable fit for largest number of respirator wearers.
Cradle suspension system	Cradle straps provide a comfortable, secure fit without slipping. Convenient side adjustment of headband straps. "One-Piece" suspension prevents loss or mis-assembly of individual straps. Easily removed for cleaning.
Headband yoke	Allows cartridges to be located lower and further back, improving side vision.
Exhalation valve assembly	Exceptionally low breathing resistance. Positive pressure fit check without removing cover.
Direct cartridge-to-facepiece seal	Eliminates the risk of improper seal and reduced protection due to lost or worn sealing gaskets. Minimizes replacement parts inventory. Ease of maintenance, no cartridge receptacles to clean.

# NORTH DUAL CARTRIDGE AND FILTER AIR-PURIFYING RESPIRATORS

	<b>NT990-1</b> Organic Vapor Cartridge	Organic Vapors Approved for respiratory protection against organic vapors	7701L TC-23C-49 7701M TC-23C-49 7701S TC-23C-49	77BP01L TC-23C-102 77BP01M TC-23C-102 77BP01S TC-23C-102	7601 TC-23C-180
	<b>NT990-1</b> Organic Vapor Cartridge <b>NT990-4</b> Dust/Filter Cartridge <b>NT990-27</b> Filter Cartridge/Filter Cover	Organic Vapors, and Dust and Filter Approved for respiratory protection against organic vapors, dusts and mists having a time-weighted average not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot.	7711L TC-23C-73 7711M TC-23C-73 7711S TC-23C-73	77BP11L TC-23C-103 77BP11M TC-23C-103 77BP11S TC-23C-103	7611 TC-23C-185
	<b>NT990-1</b> Organic Vapor Cartridge <b>NT990-14</b> Paint Spray/Mist <b>NT990-27</b> Filter Cartridge/Filter Cover	Paints, Lacquers, Enamel Mists and Organic Vapors Approved for respiratory protection against (1) mists of paints, lacquers and enamels (2) organic vapors or (3) any combination thereof. Do not use for protection against paints containing isocyanates.	7731L TC-23C-75 7731M TC-23C-75 7731S TC-23C-75	77BP31L TC-23C-178 77BP31M TC-23C-178 77BP31S TC-23C-178	7631 TC-23C-188
	<b>NT990-1</b> Organic Vapor Cartridge <b>NT990-43</b> Pesticide Filter <b>NT990-27</b> Filter Cartridge/Filter Cover	Pesticides Approved for respiratory protection against pesticides. Not approved for Lacquers.	7749L TC-23C-74 7749M TC-23C-74 7749S TC-23C-74	77BP49L TC-23C-178 77BP49M TC-23C-178 77BP49S TC-23C-178	7649 TC-23C-190
	<b>NT990-3</b> Acid Gas Cartridge	Chlorine, Hydrogen Chloride, Sulfur Dioxide and Peroxyacetylene Approved for respiratory protection against chlorine, hydrogen chloride, sulfur dioxide or peroxyacetylene.	7702L TC-23C-228 7702M TC-23C-228 7702S TC-23C-228	77BP02L TC-23C-227 77BP02M TC-23C-227 77BP02S TC-23C-227	7602 TC-23C-228
	<b>NT990-3</b> Acid Gas Cartridge <b>NT990-4</b> Dust/Filter Cartridge <b>NT990-27</b> Filter Cartridge/Filter Cover	Chlorine, Hydrogen Chloride, Sulfur Dioxide and Peroxyacetylene and Dusts and Mists Approved for respiratory protection against chlorine, hydrogen chloride, sulfur dioxide or peroxyacetylene dusts and mists having a time-weighted average not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot.	7712L TC-23C-229 7712M TC-23C-229 7712S TC-23C-229	77BP12L TC-23C-230 77BP12M TC-23C-230 77BP12S TC-23C-230	7612 TC-23C-231
	<b>NT990-3</b> Organic Vapor and Acid Gas Cartridge	Organic Vapors, Chlorine, Hydrogen Chloride, and Sulfur Dioxide Approved for respiratory protection against organic vapors, chlorine, hydrogen chloride, or sulfur dioxide.	7703L TC-23C-85 7703M TC-23C-85 7703S TC-23C-85	77BP03L TC-23C-104 77BP03M TC-23C-104 77BP03S TC-23C-104	7603 TC-23C-181
	<b>NT990-4</b> Organic Vapor and Acid Gas Cartridge <b>NT990-4</b> Dust/Filter Cartridge <b>NT990-27</b> Filter Cartridge/Filter Cover	Organic Vapors, Chlorine, Hydrogen Chloride, and Sulfur Dioxide and Dusts and Mists Approved for respiratory protection against organic vapors, chlorine, hydrogen chloride, or sulfur dioxide dusts and mists having a time-weighted average not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot.	7713L TC-23C-66 7713M TC-23C-66 7713S TC-23C-66	77BP13L TC-23C-105 77BP13M TC-23C-105 77BP13S TC-23C-105	7613 TC-23C-186
	<b>NT990-4</b> Ammonia and Methylamine Cartridge	Ammonia and Methylamine Approved for respiratory protection against ammonia or methylamine.	7704L TC-23C-63 7704M TC-23C-63 7704S TC-23C-63	77BP04L TC-23C-176 77BP04M TC-23C-176 77BP04S TC-23C-176	7604 TC-23C-182
	<b>NT990-4</b> Ammonia and Methylamine Cartridge <b>NT990-4</b> Dust/Filter Cartridge <b>NT990-27</b> Filter Cartridge/Filter Cover	Ammonia and Methylamine Dusts and Mists Approved for respiratory protection against ammonia or methylamine dusts and mists having a time-weighted average not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot.	7714L TC-23C-64 7714M TC-23C-64 7714S TC-23C-64	77BP14L TC-23C-177 77BP14M TC-23C-177 77BP14S TC-23C-177	7614 TC-23C-187



# KLEENGUARD COVERALLS



## BASIC PROTECTION

KleenGuard BP Coveralls offer workers protection against asbestos fibers and other particles at an economical price. This fabric allows air to pass through to evaporate perspiration and cool the skin -- making workers more comfortable and reducing heat stress. Designed for short duration use including asbestos abatement.

Stock No. 010523 X-Large With Hood and Boot

Stock No. 010524 XX-Large With Hood and Boot

## GENERAL PROTECTION

KleenGuard GP Coveralls offer effective protection against many particles including asbestos fibers -- including water and water based products. KleenGuard breathes like cloth, keeping workers cooler and more comfortable. Ideal for asbestos removal jobs where significant water is used and worker might get wet.

Stock No. 010503 XX-Large White with elastic back and wrist

Stock No. 010520 Large, White with elastic back and wrist,  
attached hood and boots.

Stock No. 010521 X-Large, White with elastic back and wrist,  
attached hood and boots

Stock No. 010533 XX-Large, White with elastic back and wrist,  
attached hood and boots.

Stock No. 010525 X-Large, Grey with Hip-pocket

Stock No. 010526 XX-Large, Grey with Hip-pocket

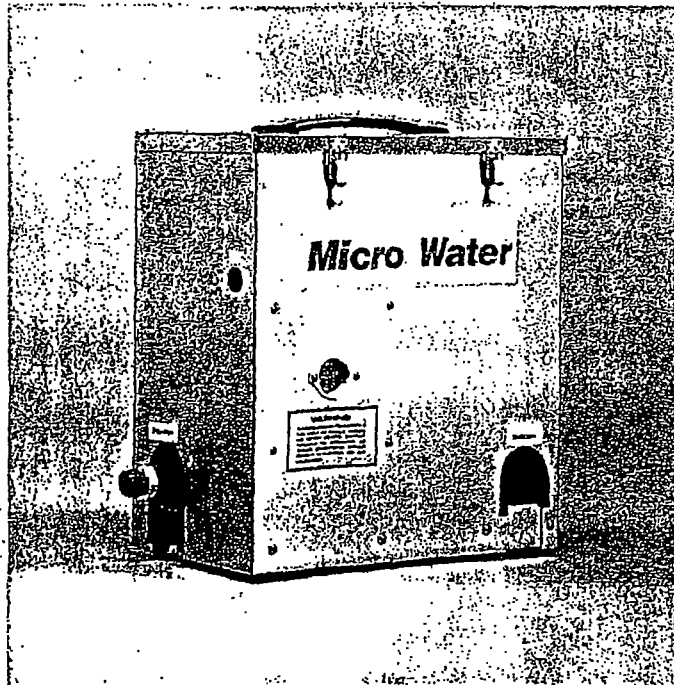
Stock No. 010518 Hood only with Elastic face

Stock No. 010519 Elastic Top Boot Cover

# Critical Systems

Houston, Texas

ADVISOR OF CRITICAL IMPORTANCES INC.



## MICRO WATER

### SHOWER WATER FILTRATION SYSTEM

#### FEATURES :

- \* Compact Version of the Mini Water System
- \* High Quality Shower Water Filtration
- \* Impervious to Rust and Corrosion
- \* Enclosed in a Stainless Steel Cabinet
- \* Lightweight & Mobile
- \* Self Priming to 10 Feet of Suction Lift
- \* Built-in Electric Level Control Actuator
- \* Actuator Engages at 2.5" and Disengages at 1" of Water Level (Adjustable)
- \* Pressure Gauges on Each Stage
- \* Two Stage Filtration :
  - 1st stage : 20 Micron
  - 2nd stage : 5 Micron

#### SPECIFICATIONS :

- \* Dimensions : 10 1/2" D x 16 1/2" W x 18" H
- \* Weight : 32 lbs. Dry
- \* Water Connections : Garden Hose Thread
- \* Motor : 1/12 Hp - Thermally Protected
- \* Power : 115 Volts / 60 Hz
- \* Full Load Amps : 1.75 Amps
- \* Flow Capacity : 5.5 gpm @ 8 PSI  
4.7 gpm @ 6 PSI

## Critical Systems

A Division of Critical Industries, Inc.

TM

### MICRO WATER FILTRATION SYSTEM

#### Specifications:

Dimensions:	16 1/2 in. L x 11 in. W x 18 1/2 in. H
Base and Case:	304 Stainless Steel
Weight:	30 pounds
Power supply:	115 VAC/60 Hz.
Gauges:	Pressure gauges located on both stages to indicate filter loading.
Level control:	Built in electrical level control actuator.
Flow Capacity:	"On" at 2.5 in. WC "Off" at 1 in. WC 5.5 GPM @ 7 Ft. of Head 4.7 GPM @ 18.5 Ft. of Head
Inlet connection:	Female or male garden hose thread.
Outlet connection:	Male garden hose thread.

#### PUMP

Pump Body Material:	Bronze, chrome plated
Impeller:	Neoprene
Liq. Temperature Range:	140 degrees F to 40 degrees F
Priming:	Self priming to 10 feet of suction lift.

#### MOTOR

Amps:	1.75 amps.
Protection:	Thermally protected (Automatic)
Horsepower:	1/12 Hp.

#### FILTRATION

Stage I:	9.75 in. disposable 20 micron pleated polyester cartridge 5 sq. ft.
Stage II:	9.75 in. disposable 5 micron pleated polyester cartridge 5 sq. ft.
Feature:	Corrosion resistant filter housing.

# Critical Systems

A Division of Critical Industries, Inc.

TM

## MINI WATER FILTRATION SYSTEM

### SPECIFICATION:

Dimensions:  
Weight:  
Power Supply:  
Gauges:

Level Control:  
(standard)  
Flow Capacity:  
Inlet Connection:  
Outlet Connection:

30" L x 30" W x 38" H  
55 lbs. Dry  
110 VAC/60 Hz  
Pressure gauges located on each  
stage indicate filter loading  
Electric  
"ON" @ 6.75" "OFF" @ 1.5" of water  
17 gpm @ 8.5 psi  
FGHT  
MGHT

### PUMP

Model No:  
Housing Material:  
Impeller

IP 862A  
Aluminum  
Aluminum

### MOTOR

Model No:  
H.P.:  
RPM:  
Full Load Amps:  
Frame:  
Service:  
Thermal Protection:

5K956B  
1/3  
3450  
6  
56J  
1.85  
Yes (Automatic Reset)

### FILTRATION

Stage I:

Three 19.5" disposable 20  
micron pleated polyester  
cartridges-25 sq. ft. (total)

Stage II:

Two 9.75" disposable 5 micron  
pleated polyester cartridges-  
10 sq. ft. (total)

# OMNIGUARD™ III

[Home](#) | [Accessor](#) | **Omniguard** | [Stingray](#) | [tech support](#) | [software downloads](#) | [what's new](#) | [contact ESI](#)

**features** | [details](#) | [specifications](#) | [accessories & options](#) | [distributors](#) | [tech support](#) | [software downloads](#)

The clear choice for monitoring and documenting Vacuum and Pressure in a containment area. Ideal for Asbestos, Lead and Mold abatement and Clean Room monitoring. The Omniguard III utilizes state of the art pressure measurement technology to accurately monitor negative pressure inside a containment area. With features designed to display information clearly and quickly, you'll be confident that you have the best instrument for the job.



- Large graphic display shows current pressure, monitoring status and alarm settings at a glance
- Instant on screen help
- Programmable high and low alarm setpoints
- Menu driven interface for easy setup and use
- Easy calibration in the field, temperature compensated for unsurpassed accuracy.
- Dual inlet ports allow monitoring between two areas
- Memory capacity for over 2000 readings, each pressure reading and alarm occurrence logged with individual time and date stamp
- Multiple reports available at the touch of a key
- 95 decibel audible alarm notifies workers and bystanders when containment is lost
- Relay output supports remote alarm, telephone autodialer or external fan units
- Thermal printer, no ink ribbons
- Paper stores easily in protected compartment
- Rugged self-contained unit includes power cord, owner's manual, 10' of hose and spare paper roll stored in the lid
- Serial port is easily accessible for sending logs to a PC
- Year 2000 compliant

## Configurable Features

- High and low alarm setpoints
- Date and time
- Print/log interval adjustable to

- conserve paper and memory
- Relay output can trigger remote alarm, autodialer or other external device
- Variable response rate to avoid nuisance alarms in windy environments
- Passcode protection prevents unauthorized tampering with job settings
- Pressure displayed in units of Inches WC, Millimeters WC or Pascals
- Automatic printout and logging of all changes to settings
- Configuration report prints current settings and monitoring status for easy review
- View log on screen, scroll through entire memory contents



*Designed to be the most reliable long term monitoring recorder in field, the Omniguard III offers compact design, ease of use and durability that will last from job to job.*

Top of page

Engineering Solutions Inc. • Tukwila, WA • (206) 241-9395 • Fax (206) 241-9411

## 6 GALLON H.E.P.A. FILTERED VACUUMS

These high performance 6 gal. vacuums are a must for small jobs, glove bagging, tight areas, and laboratories. With all the features of a larger vacuum, (Dry and Wet/Dry capabilities) yet light weight and portable for easy transportation.

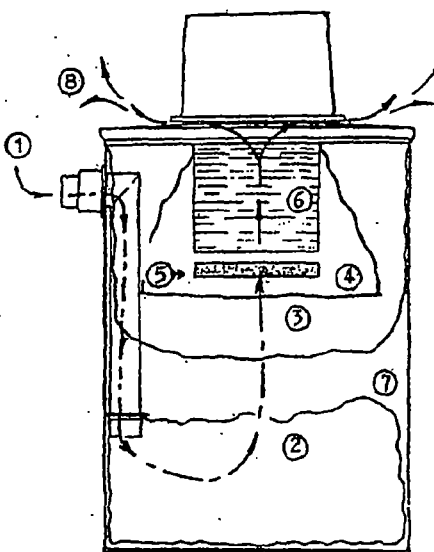
These vacuums feature a H.E.P.A. (High Efficiency Particulate Air) filter that is 99.99% efficient at 0.3 micron (D.O.P. method) - meets or exceeds OSHA and EPA re-

quirements for cleaning the air of lead, asbestos, and other toxic dust. NIKRO H.E.P.A. filtered vacuums have a five stage filtration system; Disposable paper bag, Secondary paper filter, Water Repelling/Non-Clinging Dacron filter bag, Micro-Impact filter, and the H.E.P.A. filter which is positioned in front of the motor, protecting component parts from contamination.

Whatever the application.....Turn to NIKRO for a Safer Environment.

### OPERATION

- 1) Debris enters the vacuum through the intake and travels down the tube.
- 2) The collection bag is the first of five filters. Here the bulk of the debris is collected, allowing safe, easy disposal.
- 3) The secondary paper filter traps the larger size dust particles which escape from the collection bag, protecting the life of the dacron filter bag.
- 4) The water repelling/non-clinging dacron filter bag sheds water and soot, protecting the H.E.P.A. filter from moisture, larger dust particles, etc.
- 5) The micro-impact filter is composed of specially treated, high efficiency, high density, woven fiberglass and is the most important of the four pre-filters.
- 6) The H.E.P.A. filter is the primary and most critical of the five stage filtration system. Each H.E.P.A. filter is individually tested and certified to be a minimum of 99.99% efficient at 0.3 microns by the D.O.P. Test method.
- 7) A plastic bag is situated inside the tank for clean and easy disposal of the collection bag.
- 8) Clean air is exhausted allowing for a safer environment.



### SPECIFICATIONS

Model #	Static Lift	C.F.M.	No. of Filters	Cord Length	Tank Material	Tank Size	Wet Cap.	Weight	Cert. Assy.-	H.E.P.A. (High Efficiency Particulate Air) filter meets or exceeds the following Military & Government specifications.
HDP0688	88"	95	5	30'	Steel	6 gal	n/a	29	Yes	MIL - F - 51079 MIL - F - 510688 U/L Listed
HD00688	88"	95	5	30'	S/S	6 gal	n/a	26	Opt.	
HW00688	88"	95	5	30'	S/S	6 gal	4 gal	39	Yes	

638 N. Iowa, Villa Park, Illinois 60181  
 Telephone: 708-530-0558 FAX: 708-530-0740

# NIKRO

INDUSTRIES, INC. • 638 N. Iowa Street, Villa Park, Illinois 60181 • (708) 530-0558 • FAX (708) 530-0740

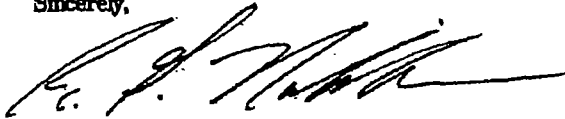
November, 1998

To Whom It May Concern:

This is to advise that all our Nikro H.E.P.A. filtered vacuums are built in accordance with and meet the ANSI Z9.2 Standards.

All of our H.E.P.A. filters are manufactured and D.O.P. Tested in accordance with MIL-STD 282 and UL586, and are registered and labeled on each individual unit by the manufacturer. All the filters we use meet, and in most cases, exceed the minimum standard of 99.97% efficiency for 0.3 micrometer particles.

Sincerely,



Roland G. Nicholson  
President

BGN:hc



# HEPA Vacuums

## Exceed All EPA & OSHA Filtration Standards



Model 102ASB

### Model 102ASB Vacuums

Our popular 2-horsepower 2-stage long-life motor makes this HEPA vacuum a true "work horse" for heavy duty service in professional abatement work. The 102ASB offers superior vacuum recovery, ranging from dry, light particulates to wet, heavy debris. 102ASB12P is a heavy duty poly link vacuum while the 102ASB DA is an adapter to be used on a steel drum.

#### Features:

- High efficiency "Drop-in" style HEPA filter individually certified to have a minimum efficiency of 99.99% at 0.3 microns (based on hot D.O.P. tests)
- Air seal gasket between the motorhead and tanks forms a positive lock fit
- Polyester prefilter is located on the bottom of the HEPA filter, and is held firmly in place with Velcro fasteners
- A Dacron filter bag covers the entire spacer sleeve and HEPA filter for three-stage filtration. Dacron material sheds dust to maintain maximum vacuum efficiency.
- 25 foot power cord.

model	horse power	water lift	cfm	recovery wet	shipping weight	product code	list price
102ASB12P	2	105"	110	12 gallon	74	B160421	\$ 1,000.00
102ASB DA*	2	105"	110	55 gallon	63	B160446	\$ 1,000.00

102ASB12P price includes complete tool kit.  
\*Drum not included

#### Tool kit included:

- 10' x 1.5" hose assembly
- 5' two-piece metal wand
- standard floor brush tool
- standard floor squeegee tool
- standard carpet tool
- standard round dusting brush
- standard crevice tool

(U) 102 model is U.L. approved

### HEPA Vac Attachments

description	product code	45 Dry		86 Dry		30 Dry		86/102 Wet/Dry	
		list price	product code	list price	product code	list price	product code	list price	product code
replacement tool kit	B160424	\$ 65.00	B160450	\$ 92.50	B160425	\$ 20.50	B160456	\$ 12.00	B160457
10' x 1.5" hose assembly	B702361	\$ 21.30	B000000	\$ 25.00	B000000	\$ 25.00	B000000	\$ 25.00	B000000
5' two-piece metal wand	B702364	\$ 21.00	B521100	\$ 33.40	B521100	\$ 33.40	B521100	\$ 33.40	B521100
standard floor brush tool	B702365	\$ 15.50	B527005	\$ 19.90	B527005	\$ 19.90	B527005	\$ 19.90	B527005
standard floor squeegee tool							B527006	\$ 19.90	B527006
standard carpet tool	B702367	\$ 20.00	B527006	\$ 19.90	B527006	\$ 19.90	B527006	\$ 19.90	B527006
standard round dusting brush	B702363	\$ 3.30	B000000	\$ 9.50	B000000	\$ 9.50	B000000	\$ 9.50	B000000
standard crevice tool	B702362	\$ 2.20	B701005	\$ 4.00	B701005	\$ 4.00	B701005	\$ 4.00	B701005

### HEPA Vac Accessories

description	product code	45		86		30		102	
		list price	product code	list price	product code	list price	product code	list price	product code
HEPA filter	B702340	\$ 213.00	B526520	\$ 36.00	B000000	\$ 272.40	B000000	\$ 272.40	B000000
spacer sleeve			B701005	\$ 1.00			B000000	\$ 1.00	B000000
dacron filter bag	B000000	\$ 17.20	B000000	\$ 17.20			B000000	\$ 17.20	B000000
prefilter			B527005	\$ 1.00			B000000	\$ 1.00	B000000
compressible paper bag	B700405	\$ 1.00	B000000	\$ 1.00	B000000	\$ 1.00	B000000	\$ 1.00	B000000
carpet tool	B524200	\$ 1.00	B000000	\$ 1.00	B000000	\$ 1.00	B000000	\$ 1.00	B000000
floor squeegee tool					B000000	\$ 1.00			
standard crevice tool			B000000	\$ 1.00			B000000	\$ 1.00	B000000
standard crevice tool			B000000	\$ 1.00			B000000	\$ 1.00	B000000

All prices refer to each, unless otherwise stated.

# PRODUCT DATA

## FIBERSET<sup>®</sup> PM

### DESCRIPTION

Product No.: 7470 white, 7475 clear, 7480 blue

Fiberset PM is a pre-mixed "lockdown" sealing treatment for microscopic residual fibers present after removal of asbestos containing material (ACM). Fiberset PM is a ready-to-use, class "A" fire rated coating that provides a flexible barrier over residual fibers to insure final air clearance. Fiberset PM and Fiberset FT are the only UL<sup>®</sup> classified (#R13770) lockdowns accepted for fluted, cellular and corrugated deck assemblies. Fiberset PM is compatible with most leading brands of replacement fireproofing and flooring adhesives. Fiberset PM can also be used to penetrate asbestos contaminated soil in crawl spaces. Fiberset PM is a water based nontoxic coating which employs advanced 100% acrylic resin technology to extend the life expectancy of airless spray equipment.

UL Classification: ASTM E-119

UL Category: Encapsulant Materials

### PROPERTIES

- Volatile: Water
- Average particle size: 0.2 microns
- Viscosity @ 77°F: 55-60 Krebs Units
- Weight per gallon @ 77°F: 8.5 lbs.
- Film Hardness: Excellent
- Film Flexibility: Excellent
- Impact Resistance: Excellent
- Water resistance of dry film: Excellent
- Bond Strength to concrete/steel: Excellent
- Coverage: not less than 500 sq. ft./gal.  
(as specified by UL)
- Flash point: Tag Closed Cup, Non-combustible  
water based product.
- Dry Time 1 - 2 hours
- Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).
- Odor: virtually odorless.
- Finish: slight gloss
- Packaged: 5, and 55 gallon containers



### APPLICATION INFORMATION

**LOCKDOWN:** Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces. Fiberset PM has been accepted as part of a UL Classified Fireproofing System for use with Retro-Guard<sup>®</sup> manufactured by W.R. Grace & Co., Conn.

**PULLDOWN BY MISTING:** Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road  
Andover, MA 01810 U.S.A.  
Toll Free: (800) 342-3755  
Tel.: (978) 623-9987 Fax: (978) 475-6205  
[www.fiberlock.com](http://www.fiberlock.com)

# APPLICATION PROCEDURES FOR FIBERSET PM

## PREPARATION

Prior to application, stir thoroughly to achieve a uniform consistency. Fiberset PM is pre-mixed, water addition is not necessary.

## APPLICATION EQUIPMENT

Professional models of all brands of spray equipment can be used to successfully apply Fiberset PM. Use the settings below when applying Fiberset PM:

Pressure: 2500-2700 psi  
Hose length: 100 feet  
Hose diameter: 1/4 inch  
Tip size: .015 - .025 (orifice size)  
Fan size: 12 inches

## CLEAN UP

Tools and drippings should be cleaned with soap and water before coating dries.

## SHIPPING AND STORAGE INFORMATION

Shelf Life: 3 years in sealed containers

Storage Temperature: Keep from freezing. Store in a dry place at temperatures between 40°F - 100°F

Flash Point: None.

**Note:** Fiberset PM is part of a UL Classified Fireproofing System for use with Classified types RG and RG1 cementitious mixtures manufactured by Zonolite Construction Products Division W.R. Grace & Co., Conn.

**KEEP OUT OF REACH OF CHILDREN  
FOR PROFESSIONAL USE ONLY  
KEEP FROM FREEZING**

**Caution:** Approved respirators must be used to prevent inhalation of asbestos fibers that may be present in the air. Protective clothing should be worn. Tools and drippings should be cleaned immediately with clean, soapy water before the coating dries. Careful consideration should be given to all Environmental Protection Agency (EPA), OSHA and state regulations in effect at the time of application of Fiberset PM. The EPA, through the Office of Pesticides and Toxic Substances has issued reports headed "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings," EPA 560/5 85-024, June 1985, and "Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for Asbestos Containing Materials," 207-2003, July 1990, containing the proper data, cautions, and procedures for asbestos control. Copies are available from the Environmental Assistance Division, TS-799, TSCA Assistance Information Service, U.S. EPA, 401 M Street SW, Washington, DC 20460, (202) 554-1404.

Keep from freezing. Do not store at temperatures above 100°F.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of this product are beyond our control. Neither Fiberlock Technologies, Inc., nor our agents shall be responsible for the use or results of use of this product or any procedures or apparatus mentioned. We recommend that the prospective user determine the suitability of Fiberset PM for each specific project and for the health and safety of personnel working in the area.

# PRODUCT DATA

## PENEWET®

### DESCRIPTION

Product No.: 6450 clear

Penewet is an ready-to-use, colorless wetting agent/surfactant solution incorporating advanced concepts in surface chemistry. It provides powerful wetting, penetrating and coalescing of asbestos containing materials (ACM) to permit handling and removal of these materials under damp, dust-free conditions. Penewet is a nonflammable water based nontoxic liquid which will not corrode aluminum components of spray equipment.

### PROPERTIES

- Solids by Weight: 10 +/-2%
- Volatile: Water
- Average particle size: 0.2 microns
- Viscosity @ 77°F: 50-55 Krebs Units
- Weight per gallon @ 77°F: 8.8 lbs.
- Ionic nature: Non-ionic
- Flammability: Non-flammable
- Phosphate free?: Yes
- Surface tension: 31 dynes/cm.
- Coverage: 500 sq.ft./gal.
- Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).
- Odor: Applied indoors, virtually odorless.
- Packaged: 5, and 55 gallon containers

### APPLICATION INFORMATION

**SURFACTANT/WETTING AGENT:** Penewet is a ready-to-use formulaiton. Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces prior to post removal air monitoring.

**PULLDOWN BY MISTING:** Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road  
Andover, MA 01810 U.S.A.  
Toll Free: (800) 342-3755  
Tel.: (978) 623-9987 Fax: (978) 475-6205  
[www.fiberlock.com](http://www.fiberlock.com)

**Appendix G**  
**Air Monitoring Plan**

**IRS ENVIRONMENTAL, INC.**  
**ASARCO Phase 4 Building Cleaning and Demolition**

**Personal Air Monitoring Plan – Asbestos Removal**

**LABORATORY SERVICES**

Mountain Inspection and Laboratory Services, Inc.  
9922 E. Montgomery Ave. # 13  
Spokane, WA 99206  
(509) 922-1365  
(509) 922-1380

Mountain Inspection and Laboratory Services, Inc. has a fully qualified professional staff to conduct air sample analysis for airborne asbestos. This project involves the removal of the following Class I and II materials:

- TSI – Pipe insulation fittings
- CAB – Cement Asbestos Board
- Vinyl floor tile and sub flooring
- Window caulking
- Millboard
- Gaskets Materials

Air sampling to be performed

- Personnel Air Sampling to complete exposure assessments.

Mountain Inspection and Laboratory Services, Inc will perform laboratory analysis using Phase Contrast Microscopy (PCM) in accordance with NIOSH Method 7400A. Visual Inspections to document work in progress and compliance with the specifications shall be conducted by IRSE Competent Person on a daily or as needed basis. Daily project logs shall include descriptions of the work being performed, personnel onsite, hours worked, percentage of work completed, problems encountered, and information regarding air sampling and analysis.

**ABATEMENT PROJECT MONITORING**

Personnel monitoring shall be conducted as needed to collect minimum liters per sample requirements. Monitoring will commence with the first asbestos disturbance and continue until an exposure assessment for each removal activity: *Removal of pipe covering using glove bag methods, removal of CAB using wet manual methods, flooring removal using wet manual methods, window caulking, roofing material and metalbestos siding.*

**Sample Location**

**Sample Quantity**

Work Area-Personnel

Two samples per day for each removal activity.

Work Area-Personnel Excursion

One sample per day for each activity

Outside Work Area

One sample per day at each Air Filtration Device (AFD) Exhaust.

1. Calibration of pumps - Conducted prior to, and after the proper run time for the samples has been achieved. A hand held rotometer, calibrated to a Buck Gilibrator once every six months will be utilized for calibration of high volume pumps.
2. Setting of pumps - The pumps will be placed in the breathing zone of the most contaminated worker performing each task, to provide the best overall representation of the exposure involved.
3. Personnel sampling - a minimum of 280 total liters of air will be collected per sample. (60 liters for Personnel excursion) Samples will be collected from the breathing zone of the most contaminated worker through a 25 mm Mixed Cellulose Ester (MCE) filter at flow rates between five (2) and (3) liters per minute.
4. Analysis - Mountain Inspection and Laboratory Services, Inc. personnel will analyze the air samples off site at Mountain Inspection and Laboratory Services, Inc., a NVLAP Certified Facility. The air samples will be analyzed for fiber content and concentration (fibers per square millimeter of filter area, and fibers per cubic centimeter of air sampled) using NIOSH method 7400, Fibers", August 15, 1987 revision.
5. Final Report - A comprehensive final report detailing the analytical results of the samples collected will be provided to MCS Environmental for review. Sample Results shall be reported to two decimal places or the quantification limit for the type of sample collected. Actual fiber levels may be included in the report, however, two decimal place accuracy shall be used for determining work practice modifications, stop work requirements, and clearance results. Sample results less than .01 shall be reported as <0.01 within the air monitoring reports.

**Appendix H**  
**Respirator Protection Program**



# IRS ENVIRONMENTAL RESPIRATORY PROTECTION PROGRAM

## Table of Contents

1.0	Introduction .....	58
2.0	Respirator Policy .....	58
3.0	References .....	58
4.0	Program Administration .....	58
4.1	Safety Coordinator .....	58
4.2	Job Superintendents/On-site Safety Supervisors .....	59
4.3	Employee Responsibility .....	59
5.0	Availability of Respirators .....	59
6.0	Selection and Use of Respirators .....	60
6.1	Respirator Selection Based on Exposure .....	61
6.1	Respiratory Selection Table .....	61
6.2	Respiratory Selection – Activity Specific .....	62
6.2(A)	Respirator Selection Table – ASBESTOS .....	63
6.2(B)	Respirator Selection Table – LEAD .....	64
7.0	Program Evaluation .....	64
8.0	Training .....	64
9.0	Fit Testing .....	66
9.1	Qualitative Fit Test Procedure .....	66
9.2	User Seal Check Procedure .....	66
10.0	Cleaning and Disinfecting .....	67
11.0	Cartridge Replacement .....	67
12.0	Storage .....	67
13.0	Inspections and Maintenance .....	68
14.0	Medical Examinations .....	68
14.1	Information Provided to the PLHCP .....	69
14.2	Medical Questionnaire Administration .....	69
14.3	PLHCP's Written Recommendations .....	69
14.4	Additional Medical Evaluations .....	70
15.0	Work Area Surveillance .....	70
16.0	Approved Respirators .....	70

## **1.0 Introduction**

It is the policy of IRS Environmental to provide and maintain a safe and healthful work place for all employees. To that end, IRS Environmental has developed this program for the selection, use and care of respiratory protection. This respirator protection program has been written to be consistent with all required Federal and State requirements.

## **2.0 Respirator Policy**

Company personnel will use respiratory protection equipment where reasonable engineering controls and chemical substitution cannot minimize respiratory hazards. Engineering controls such as ventilation and substitution of less toxic materials are the first line of defense. However, engineering controls have not always been feasible for some of our operations or have not always completely controlled the identified hazards. In these situations, respirators and other protective equipment must be used.

This program applies to all employees who are required to wear respirators during normal work operations and during certain non-routine operations. Employees participating in the respiratory protection program do so at no cost to them. The expense associated with medical evaluations, training, and respiratory protection equipment will be borne by the Company.

Appropriate respiratory protection shall be used by all employees working in environments that are oxygen deficient (below 19.5 percent by volume); oxygen enriched (greater than 21.5% by volume); or in atmospheres contaminated by dusts, mists, vapors, smoke, or fumes that may exceed the permissible exposure limits (PELs) as defined by WISHA or OSHA or more stringent limits set by a specific Health and Safety Plan.

## **3.0 References**

State of Washington, Department of Labor and Industries, General Occupational Health Standards, WAC 296-62-071, Respiratory Protection.

American National Standards Institute, ANSI Z88.2 1980, Practices for Respiratory Protection.

Occupational Safety and Health Administration, Code of Federal Regulations, CFR 1910.134, New OSHA Respiratory Protection Standard.

## **4.0 Program Administration**

### **4.1 Safety Coordinator**

The Safety Coordinator is **Carl Burnham**. The Safety Coordinator shall be responsible for the development, coordination, and administration of the IRS Environmental Respiratory Protection Program. Specific responsibilities shall include:

1. Ensuring that the Company complies with State and Federal requirements.
2. Serving as an advisor to all levels of management on matters pertaining to respiratory protection.
3. Approving the purchase of all respiratory protection equipment.

4. Implementing and reviewing a written respiratory protection program in compliance with WISHA and OSHA requirements.
5. Initiating monitoring of work areas to evaluate potential respiratory hazards and maintaining records of monitoring activities.
6. Annual inspecting of departments to evaluate program effectiveness.
7. Ensuring all personnel wearing a respirator in a negative pressure mode have received a yearly medical evaluation which determines the physiological and psychological limitations of individual wearers.
8. Instituting and maintaining appropriate medical and biomedical surveillance programs as recommended by the licensed health care professional.
9. Implementing a change schedule for respirator cartridges based on published data, historic data, and frequency of use information.

#### 4.2 On-site Supervisors

On-site Supervisors for each location shall be responsible for on-site compliance with the respiratory protection program requirements. Responsibilities shall include:

1. Ensuring that employees are provided proper respiratory protection equipment, as required.
2. Enforcing the proper use of such equipment where and when required.
3. Ensuring that employees are properly trained in the selection, care and use of respiratory protection equipment.
4. Ensuring proper maintenance and storage of respiratory protection equipment.

#### 4.3 Employee Responsibility

Each employee has a definite responsibility in contributing to the success of the respiratory protection program. These responsibilities include:

1. Use of respiratory equipment in accordance with training and instructions received.
2. Guarding against damage to equipment.
3. Observing all safety rules and regulations pertaining to respiratory protection equipment.
4. Maintaining personal grooming habits conducive to proper wearing of respiratory protection equipment (no beards or facial hair that interferes with the face to facepiece seal).
5. Receiving a medical exam and fit-test prior to initial use of a respirator and annually thereafter.
6. Reporting any malfunction of equipment to his/her immediate supervisor.
7. Inform their supervisor or the Safety Coordinator of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding the program.
8. Notify their On-site Supervisor or the Safety Coordinator of any other problems associated with using their respirator.

## **5.0 Availability of Respirators**

Each employee who wants, or is required to wear, a respirator will be issued one along with replacement parts, cartridges and filters, as needed. The selected types of respirators are available from the Safety Coordinator.

## **6.0 Selection and Use of Respirators**

The following procedures shall be used for the selection and use of respiratory protection:

1. Respiratory protection selection will provide protection to a level of exposure below established permissible exposure limits (PEL) for identified hazardous substances and health hazards.
2. The Safety Coordinator or his/her designee will conduct a exposure assessments upon initial assignment for each operation, process, or work area where airborne contaminants may be present. Selection of respiratory protection for initial assignment will be as specified within Tables 6.1 and 6.2, or as specified within project specifications.
3. Company personnel will not enter areas where they will be exposed to hazardous substances or health hazards until the On-site Supervisor has determined the proper level of protection.
4. When respiratory protection is used, IRS Environmental personnel will not enter a site without proper positive/negative respiratory fit test as well as a current and valid qualitative/quantitative (whichever appropriate as determined by the Safety Coordinator) fit test. A current and valid qualitative/quantitative fit test means the test was successfully conducted within the past 12 months, the respirator being used is the same style, manufacturer, and size as used during fit testing, and as long as the employee has not incurred facial scarring, dental changes, cosmetic surgery, or obvious change in body weight.
5. Contact lenses may be worn with a respirator in contaminated atmospheres.
6. Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969 (A later edition of this standard, Z88.2-1980, has been issued).
7. The Safety Coordinator will ensure that respirators selected will not impair the worker's vision, hearing, communication, and physical movement necessary to perform jobs safely.
8. Until the On-site Supervisor has determined the proper level of protection, Company personnel are not to enter areas where the known

concentrations of any material create immediately dangerous to life and health (IDLH) conditions, the Oxygen concentration is below 19.5% or above 21.5%, a lower explosive limit of 10% is reached or exceeded, or there is any indication that the atmosphere may be contaminated by dusts, mists, vapors, smoke, or fumes that may exceed the permissible exposure limits (PELs).

9. Entry into confined spaces will not be allowed unless contaminant levels are known and the space is considered safe for entry. If the space is deemed a permit-required confined space, an entry permits must be issued before personnel are allowed to enter a confined space as per the IRS Environmental Confined Space Entry Program.
10. Company personnel working in areas where the workers, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere will always work at least in pairs. Communication (visual, voice, or signal line) shall be maintained between both or all individuals present. It shall be planned that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.
11. The assigned respirator outlined in Tables 6.1 and 6.2 or protection factors in "WAC 296-62-07131, Table 1--Assigned Protection Factors" will be used when selecting respirators. Half-mask respirators can provide adequate protection for routine respirator use, where employee exposures do not exceed ten times the permissible exposure limit.

#### 6.1 Respirator Selection Based Upon Exposure

Table 6.1 lists types of respirators available to employees. Each respirator listed has specified use limits for the hazardous contaminants encountered by IRS Environmental: asbestos and lead. For other contaminants other than asbestos and lead, the Safety Coordinator will select appropriate respiratory protection.

Table 6.1: Respirator Selection Table		
Brand/Type Respirator	Use Limits Asbestos	Use Limits Lead
North 7700, ½ Face Negative Pressure	1 f/cc	500 µg/m <sup>3</sup>
North 76008A, Full Face Negative Pressure	5 f/cc	2,500 µg/m <sup>3</sup>
Racal Powerflow, Full Face Powered Air Purifying	10 f/cc	5,000 µg/m <sup>3</sup>
Neoterik SR-14, Full Face Powered Air Purifying	10 f/cc	5,000 µg/m <sup>3</sup>
Neoterik 50366CF, Full Face Supplied Air, Constant Flow with HEPA Egress	100 f/cc	10,000 µg/m <sup>3</sup>
North 85785, Full Face Supplied Air, Constant Flow with HEPA Egress	100 f/cc	10,000 µg/m <sup>3</sup>

I.S.I Safee, Full Face, Supplied Air, Pressure Demand w/HEPA Egress	100+ f/cc	10,000 $\mu\text{g}/\text{m}^3$
North 85785, Full Face, Supplied Air, Pressure Demand w/HEPA Egress	100+ f/cc	10,000 $\mu\text{g}/\text{m}^3$

**6.2 Respirator Selection** – Activity Specific Respirators are required for all employees engaged in the tasks listed in Table 6.2(A) and 6.2(B). The expected concentration range of asbestos (Table 6.2(A)) and lead (Table 6.2(B)) for each activity is shaded. Exposure ranges for some activities are wide due to hazardous constituent content of the material, work practices used, and engineering controls instituted. IRS Environmental will supply respirators for the highest concentration listed for each activity. IRS Environmental has established the following exposure data and/or consulted regulatory guidance to develop the listed activities' expected airborne concentrations. As these activities continue to be assessed and new activities are initially assessed, the Safety Coordinator will amend this section as needed.

**Table 6.2(A): Respirator Selection Table - ASBESTOS**

Removal Activity	0-1 f/cc	1-5 f/cc	5-10 f/cc	10-100 f/cc
Blanket Insulation <sup>1</sup>				
Boiler Insulation <sup>1</sup>				
Boiler Breaching <sup>1</sup>				
Cement Asbestos Board				
Ceiling Tile				
Caulking				
Duct Tape				
Duct Covering <sup>1</sup>				
Floor Tile - Manual				
Mastic - Manual				
Mastic - "Blastrak"				
Flex Gaskets on Ducts				
Hard Pipe Fittings, Glovebag				
Hard Pipe Fittings, No Glovebag				
Linoleum Felt Backing				
Pipe Insulation "Aircell" - Glovebag				
Pipe Insulation "Aircell" - No Glovebag				
Pipe Insulation - Contained Block				
Roofing - Asphalt Impregnated				
Roofing - Felt				
Spray Texture - "Popcorn" <sup>1</sup>				
Structural Fireproofing - Hard <sup>1</sup>				
Structural Fireproofing - Loose <sup>1</sup>				
Rope Material				
Tank Insulation - Block				
Tank Insulation - "Aircell"				
Wall Board				
Window Glazing				

<sup>1</sup> Minimum respiratory requirement in Washington State is at least full face, supplied air, constant flow.

**Table 6.2(B): Respirator Selection Table - LEAD**

Removal Activity	0 - 500 µg/m <sup>3</sup>	501-2,500 µg/m <sup>3</sup>	2,501+ µg/m <sup>3</sup>
Open Abrasive Blast Cleaning with Expendable Abrasives			
Open Abrasive Blast Cleaning with Recyclable Abrasives			
Torch Cutting			
Torch Burning			
Welding			
Using Lead Containing Mortar			
Lead Burning			
Rivet Busting			
Mechanical Cleaning (with Power Tools)			
Cleanup of Abrasive Blast Cleaning with Expendable Abrasives			
Abrasive Blast Enclosure Movement			

## **Appendix I**

### **Site Layout**





**Appendix J**  
**Laboratory Certifications**

United States Department of Commerce  
National Institute of Standards and Technology



---

## Certificate of Accreditation to ISO/IEC 17025:1999

---

NVLAP LAB CODE: 101890-0

**Mountain Laboratories**  
Spokane, WA

*is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in  
NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.  
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:*

### **BULK ASBESTOS FIBER ANALYSIS**

2006-10-01 through 2007-09-30

*Effective dates*



*Sally L. Bruce*  
\_\_\_\_\_  
For the National Institute of Standards and Technology



Your Essential  
Connection

11/15/2006

Karen Drader  
Mountain Laboratories  
9922 E. Montgomery  
Suite 13  
Spokane, WA 99206

Lab ID# 101129

Dear Karen,

Please find your laboratory's Industrial Hygiene Proficiency Analytical Testing (IHPAT) results for **Round 167**. The deadline for ordering a retest is December 1, 2006. IHPAT **Round 168** sample kits will be mailed to laboratories around January 1, 2007. Your laboratory's data will be due by 11:59pm EST on February 1, 2007. The analytes for round 168 are:

- Metals – cadmium, chromium, lead
- Asbestos – amosite
- Silica – coal dust/talc
- Organics – methyl ethyl ketone(MEK), methyl isobutyl ketone(MIK)
- Diffusive – benzene, toluene, o-xylene

Please handle, store and analyze your laboratory's PAT samples in the same manner as routine client samples. To submit your laboratory's data, please visit the Proficiency Analytical Testing (PAT) page and click on the PAT Data Entry Portal:  
<http://www.aiha.org/Content/LQAP/PT/pt.htm>

Your laboratory's password needed to access the PAT Data Entry Portal is provided in the upper right hand corner (next to your lab ID#) of the address label on the results submission form included with your PAT samples.  
Print and save the confirmation page after submitting data via the AIHA PAT Data Entry Portal.

The AIHA Laboratory Quality Assurance Programs Policies and Application for AIHA accreditation are available on-line.

<http://www.aiha.org/Content/LQAP/documents/documents.htm>

Note: The Policies for 2006 comply with ISO/IEC 17025: 1999.

I encourage you to contact me with any feedback, questions or if you wish to contest your results at (703) 846-0797.

Sincerely,

Natasha Sekitoleko  
PAT Data Specialist

## Industrial Hygiene Proficiency Analytical Testing Results

This document contains three sub-reports relating to IHPAT Round 167. The first report contains your laboratory's results listed per contaminant, per sample. The second report contains your current and 2 previous test round performance respectively (where applicable), and the final report contains summary results for all laboratories for IHPAT round 167.

### Testing Results for IHPAT Round 167

This part of the report contains your laboratory's results listed per contaminant, per sample.

Contaminant	Units	#	Result	Ref. Value	Lower Limit	Upper Limit	z-Score	Rating
Asbestos / Fibers (ASB)	f/mm2	1	216	262	128	442	-0.9	A
	f/mm2	2	81	101	49	170	-1.0	A
	f/mm2	3	144	188	92	319	-1.3	A
	f/mm2	4	101	98	48	166	0.1	A

**Please note:**

Reference value is the mean of the reference laboratories

Lower limit = reference value - 3 standard deviations

Upper limit = reference value +3 standard deviations

A: Acceptable Analysis; U: Unacceptable Analysis

Z-score = (reported result - reference value)/standard deviation

**Note:** The acceptability of reported results is based on upper and lower performance limits. This is why a reported result may appear unacceptable according to z-score, but be identified as acceptable.

### Overall Performance Summary Concluding with 167

The following table contains your laboratory's current and 2 previous test rounds performance respectively (where applicable). For more information in regard to the determination of proficiency, please see Policy Module 6B, Section 6B.2 for IHPAT and Policy Module 6C Section 6C.2 for ELPAT Lead-in-Air located at: <http://www.aiha.org/Content/LQAP/documents/accredpolicymods.htm>

Sample	Round	Round Performance	Round Score	Proficiency Status - Three Round Score
Asbestos	165	4/4	Pass	
	166	4/4	Pass	
	167	4/4	Pass	P

**Please note:**

The denominators represent the total number of samples analyzed.

The numerators represent the number of acceptable results.

Pass: Round Score  $\geq$  75%      Fail: Round Score < 75%

P – Proficient; NP – Non-proficient.

A laboratory is rated proficient (P) for the associated FoT/Method(s), if the laboratory has a passing score for the applicable PT analyte class in two (2) of the last three (3) consecutive PT rounds. A laboratory is rated non-proficient (NP) for the applicable FoT/Method if the laboratory has failing scores for the associated PT analyte class in two (2) of the last three (3) consecutive PT rounds.

If a laboratory receives samples and does not report the data, the results will be treated as outliers.

### Performance of all Labs for IHPAT Round 167

The following table contains aggregate results for all laboratories participating in IHPAT round 167.

Contaminant	#	Ref. Value	Std Dev	RSD (%)	Total Labs	Total Acceptable	Low Outlier	High Outlier
Cadmium (CAD)	1	0.00780	0.00040	5.1	196	186	6	4
	2	0.00420	0.00020	4.9	196	183	5	8
	3	0.01580	0.00081	5.1	196	191	4	1
	4	0.01170	0.00066	5.6	196	188	6	2
Lead (LEA)	1	0.0902	0.0046	5.1	197	193	3	1
	2	0.0607	0.0028	4.6	197	194	3	0
	3	0.1191	0.0057	4.7	197	195	2	0
	4	0.0312	0.0015	4.9	197	192	2	3
Zinc (ZIN)	1	0.0807	0.0044	5.4	195	187	5	3
	2	0.1196	0.0053	4.4	195	182	9	4
	3	0.1585	0.0083	5.2	195	185	8	2
	4	0.0412	0.0026	6.2	195	183	6	6
Silica (SIL)	1	0.1076	0.0215	20.0	58	56	2	0
	2	0.1588	0.0251	15.8	58	57	1	0
	3	0.0616	0.0123	20.0	58	57	0	1
	4	0.0838	0.0168	20.0	58	56	2	0
Asbestos / Fibers (ASB)	1	262	52	20.0	759	659	82	18
	2	101	20	20.0	759	644	47	68
	3	188	38	20.0	759	674	53	32
	4	98	20	20.0	759	703	29	27
Methanol (MOH)	1	0.7841	0.0749	9.6	157	148	5	4
	2	0.1154	0.0128	11.1	157	144	5	8
	3	0.2483	0.0262	10.5	157	149	2	6
	4	0.3467	0.0328	9.5	157	147	5	5

**Appendix K**  
**Material Safety Data Sheet (MSDS)**



AMREP INC

-- HEAVY DUTY ADHESIVE

MSDS Safety Information

FSC: 8040  
MSDS Date: 09/14/1992  
MSDS Num: BXJBH  
LIIN: 00N058978  
Product ID: HEAVY DUTY ADHESIVE  
MFN: 01  
Responsible Party  
Cage: 3V338  
Name: AMREP INC  
Address: 990 INDUSTRIAL PK DR  
City: MARIETTA GA 30062  
Info Phone Number: 404-422-2071  
Emergency Phone Number: 800-255-3924  
Preparer's Name: ES/KD  
Published: Y

Contractor Summary

Cage: 3V338  
Name: AMREP INC  
Address: 990 INDUSTRIAL PK DR  
City: MARIETTA GA 30062-2433  
Phone: 404-422-2071

Ingredients

Cas: 67-64-1  
RTECS #: AL3150000  
Name: ACETONE (SARA 313) (CERCLA)  
% Wt: 30-40  
OSHA PEL: 1000 PPM  
ACGIH TLV: 750PPM/1000STEL  
EPA Rpt Qty: 5000 LBS  
DOT Rpt Qty: 5000 LBS

Cas: 110-54-3  
RTECS #: MN9275000  
Name: HEXANE (CERCLA)  
% Wt: 10-15  
OSHA PEL: 500 PPM  
ACGIH TLV: 50 PPM  
EPA Rpt Qty: 1 LB  
DOT Rpt Qty: 1 LB

Cas: 75-28-5  
RTECS #: TZ4300000  
Name: PROPANE, 2-METHYL-; (ISOBUTANE)  
% Wt: 40-45  
OSHA PEL: 1000 PPM (MFR)  
ACGIH TLV: 1000 PPM (MFR)

Health Hazards Data

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.  
Route Of Entry Inds - Inhalation: YES  
Skin: YES  
Ingestion: NO  
Carcinogenicity Inds - NTP: NO  
IARC: NO  
OSHA: NO  
Effects of Exposure: ACUTE: INHAL: EXCESSIVE INHAL OF VAPS CAN CAUSE  
NASAL  
& RESP IRRIT, DIZZ, WEAK, NAUS, HDHC, POSS UNCON/ASPHYXIATION. EYES:  
IRRIT. SKIN: IRRIT DUE TO DEFAT OF SKIN. INGEST: POSS CHEM PNEUMIT IF  
ASPIRED  
INTO LUNGS. CHRONIC: EXCESSIVE INHAL OF HEXANE MAY CAUSE NERVE DMG.  
Explanation Of Carcinogenicity: NOT RELEVANT.  
Signs And Symptions Of Overexposure: SEE HEALTH HAZARDS.  
Medical Cond Aggravated By Exposure: MAY AGGRAVATE EXISTING EYE, SKIN,  
OR UPPER  
RESPIRATORY CONDITIONS.  
First Aid: EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF  
IRRITATED, SEE  
MD. SKIN: WASH WITH SOAP AND WATER. IF IRRITATED, SEE MD. INHAL:  
REMOVE TO  
FRESH AIR. RESUSCITATE IF NECESSARY. GET MEDICAL AID. INGES T: DO NOT  
INDUCE  
VOMITING. CALL MD IMMEDIATELY.

=====  
Handling and Disposal  
=====

Spill Release Procedures: ABSORB WITH SUITABLE MEDIUM.  
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.  
Waste Disposal Methods: INCINERATE OR LANDFILL ACCORDING TO LOCAL,  
STATE, AND  
FEDERAL REGULATIONS. DO NOT FLUSH INTO SEWERS. AEROSOL CANS WHEN  
VENTED TO  
ATMOSPHERIC PRESSURE THROUGH NORMAL USE, POSE NO DISPOSAL HAZARD.  
Handling And Storage Precautions: DO NOT PUNCTURE OR INCINERATE  
CONTAINERS. DO  
NOT STORE AT TEMPERATURES ABOVE 130F.  
Other Precautions: AVOID FOOD CONTAMINATION. KEEP OUT OF REACH OF  
CHILDREN.  
REMOVE IGNITION SOURCES. AVOID BREATHING VAPORS.

=====  
Fire and Explosion Hazard Information  
=====

Flash Point Text: FLAMMABLE  
Extinguishing Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE, WATER.  
Fire Fighting Procedures: WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP  
(FP  
N). USE WATER FOG TO COOL CONTRS TO PREVENT RUPTURING & EXPLODING  
CONTRS.  
PROVIDE SHIELDING FOR PERSONNEL.  
Unusual Fire/Explosion Hazard: EXTREMELY FLAMMABLE. DO NOT EXPOSE  
AEROSOLS TO  
TEMPERATURES ABOVE 130F OR THE CONTAINER MAY RUPTURE.

=====  
Control Measures  
=====

Respiratory Protection: IF VAPOR CONCENTRATION EXCEEDS TLV, USE  
NIOSH/MSHA

APPROVED RESPIRATOR IN POSITIVE PRESSURE MODE.

Ventilation: ADEQUATE VENTILATION TO KEEP VAPOR CONCENTRATION BELOW  
TLV.

Protective Gloves: NEOPRENE GLOVES.

Eye Protection: ANSI APPROVD CHEM WORKERS GOGGS (EP N).

Other Protective Equipment: NONE.

Work Hygienic Practices: WASH WITH SOAP AND WATER BEFORE HANDLING FOOD.  
REMOVE

CONTAMINATED CLOTHING.

Supplemental Safety and Health: NONE SPECIFIED BY MANUFACTURER.

=====

Physical/Chemical Properties

=====

Vapor Pres: 80 PSIG

Spec Gravity: 0.853 (H\*20=1)

Solubility in Water: PARTIAL

Appearance and Odor: STRAW COLORED LIQUID, WITH KETONE SOLVENT ODOR

=====

Reactivity Data

=====

Stability Indicator: YES

Stability Condition To Avoid: OPEN FLAME, WELDING ARCS, HEAT, SPARKS.

Materials To Avoid: STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products: CARBON DIOXIDE, CARBON MONOXIDE.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT.

=====

Toxicological Information

=====

Ecological Information

=====

MSDS Transport Information

=====

Regulatory Information

=====

Other Information

=====

HAZCOM Label

=====

Product ID: HEAVY DUTY ADHESIVE

Cage: 3V338

Company Name: AMREP INC

Street: 990 INDUSTRIAL PK DR

City: MARIETTA GA

Zipcode: 30062-2433

Health Emergency Phone: 800-255-3924

Label Required IND: Y

Date Of Label Review: 04/20/1995

Status Code: C

Label Date: 04/20/1995

Origination Code: G  
Chronic Hazard IND: Y  
Eye Protection IND: YES  
Skin Protection IND: YES  
Signal Word: DANGER  
Respiratory Protection IND: YES  
Health Hazard: Moderate  
Contact Hazard: Slight  
Fire Hazard: Severe  
Reactivity Hazard: None  
Hazard And Precautions: EXTREMELY FLAMMABLE. ACUTE: INHAL: EXCESSIVE  
INHALATION  
OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS,  
WEAKNESS,  
NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS OR ASPHYXIATION. EYES: IRR  
ITATION. SKIN: IRRITATION DUE TO DEFATTING OF SKIN. INGEST: POSSIBLE  
CHEMICAL  
PNEUMONITIS IF ASPIRED INTO LUNGS. CHRONIC: EXCESSIVE INHALATION OF  
HEXANE  
MAY CAUSE NERVE DAMAGE.

=====

Disclaimer (provided with this information by the compiling agencies):  
This

information is formulated for use by elements of the Department of  
Defense.

The United States of America in no manner whatsoever expressly or  
implied

warrants, states, or intends said information to have any  
application, use or

viability by or to any person or persons outside the Department of  
Defense

nor any person or persons contracting with any instrumentality of the  
United

States of America and disclaims all liability for such use. Any  
person

utilizing this instruction who is not a military or civilian employee  
of the

United States of America should seek competent professional advice to  
verify

and assume responsibility for the suitability of this information to  
their

particular situation regardless of similarity to a corresponding  
Department

of Defense or other government situation.

# Material Safety Data Sheet

## Section 1 Product and Company Identification

Product Name: Duct Tape

Revision #: 2.3 Date Prepared: June 3, 1993 Date Revised: September 16, 1998

Manufacturer:

Supplier/Importer:

LA-CO INDUSTRIES, Inc./*Markal* Co.

1201 Pratt Blvd.

Elk Grove Village, IL, USA

60007-5746

Information Telephone: 847-956-7600

Emergency Telephone: Call CHEMTREC

USA 800-424-9300

International (Call Collect) 1-703-527-3887

Chemical Formula: Mixture

## Section 2 Labeling

HMIS: 010

NFPA: 110

WHMIS (CANADA): NONE

EPA HAZARDS: NONE

## Section 3 Hazardous Ingredients

NO INGREDIENTS CONSIDERED HAZARDOUS UNDER OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200.

AN INERT TAPE COMPOSED OF COTTON CLOTH AND POLYETHYLENE SHEETING WITH A CALENDERED RUBBER ADHESIVE SYSTEM. NO FUMES WILL RESULT FROM THE PROPER USE OF THIS TAPE.

## Section 4 Physical/Chemical Characteristics

BOILING POINT: N.A.

SPECIFIC GRAVITY (H<sub>2</sub>O=1): N.A.

VAPOR PRESSURE (mmHg): N.A.

VAPOR DENSITY (AIR=1): N.A.

MELTING POINT: N.A.

SOLUBILITY IN WATER: N.A.

EVAP. RATE (butyl acetate=1): N.A.

APPEARANCE: SILVER TAPE

**Product Name:** Duct Tape  
**Revision #:** 2.3    **Date Prepared:** June 3, 1993    **Date Revised:** September 16, 1998

## **Section 5            Fire and Explosion Hazard Data**

FLASH POINT (method used): N.A.

FLAMMABLE LIMITS:

LEL: N.A.

UEL: N.A.

EXTINGUISHING MEDIA: N.A.

SPECIAL FIRE FIGHTING PROCEDURES: N.A.

UNUSUAL FIRE AND EXPLOSION HAZARDS: N.A.

## **Section 6            Reactivity Data**

STABILITY: STABLE

CONDITIONS TO AVOID: N.A.

INCOMPATIBILITY (MATERIALS TO AVOID): N.A.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF CARBON IF BURNED.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: N.A.

## **Section 7            Health Hazard Data**

ROUTES OF ENTRY:

INHALATION? NO

SKIN? NO

INGESTION? NO

HEALTH HAZARDS: NONE

CARCINOGENICITY:

NTP? NO

IARC? NO

OSHA? NO

SIGNS AND SYMPTOMS OF EXPOSURE: N.A.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.

EMERGENCY AND FIRST AID PROCEDURES: N.A.

## **Section 8            Precautions For Safe Handling and Use**

RELEASE AND SPILL PROCEDURES: SOLID FINISHED PRODUCT DOES NOT LEAK OR SPILL

WASTE DISPOSAL METHOD: N.A.

HANDLING AND STORAGE PRECAUTIONS: N.A.

OTHER PRECAUTIONS: N.A.

## **Section 9            Control Measures**

RESPIRATORY PROTECTION: N.A.

**Product Name:** Duct Tape  
**Revision #:** 2.3      **Date Prepared:** June 3, 1993      **Date Revised:** September 16, 1998

**VENTILATION:**

LOCAL EXHAUST: N.A.  
SPECIAL: N.A.  
MECHANICAL (GENERAL): N.A.  
OTHER: N.A.

**PROTECTIVE GLOVES:** N.A.

**EYE PROTECTION:** N.A.

**OTHER PROTECTIVE EQUIPMENT:** N.A.

**WORK/HYGIENIC PRACTICES:** N.A.

<b>Section 10</b>	<b>Other Information</b>
-------------------	--------------------------

MSDS Prepared By: Director of Chemical Safety

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF. HOWEVER, LA-CO INDUSTRIES, INC. MAKES NO REPRESENTATIONS AS TO ITS COMPLETENESS OR ACCURACY. INFORMATION IS SUPPLIED ON CONDITION THAT PERSONS RECEIVING SUCH INFORMATION WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR PURPOSES PRIOR TO USE. IN NO EVENT WILL LA-CO INDUSTRIES, INC. BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON THE INFORMATION CONTAINED HEREIN.

POLY-AMERICA INC  
EDGING

-- POLYETHYLENE SHEETING/BAGS/LAWN

=====

MSDS Safety Information

=====

FSC: 6850  
MSDS Date: 05/01/1995  
MSDS Num: BZDHP  
LIIN: 00F047749  
Product ID: POLYETHYLENE SHEETING/BAGS/LAWN EDGING  
MFN: 01  
Responsible Party  
Cage: 66830  
Name: POLY-AMERICA INC  
Address: 2000 W MARSHALL DR  
City: GRAND PRAIRIE TX 75051-2795  
Info Phone Number: 214-647-4374  
Emergency Phone Number: 214-647-4374  
Review Ind: Y  
Published: Y

=====

Preparer Co. when other than Responsible Party Co.

=====

Cage: 66830  
Name: POLY-AMERICA INC  
Address: 2000 W MARSHALL DR  
City: GRAND PRAIRIE TX 75051-2795

=====

Contractor Summary

=====

Cage: 66830  
Name: POLY-AMERICA INC  
Address: 2000 W MARSHALL DR  
City: GRAND PRAIRIE TX 75051-2795  
Phone: 214-647-4374

=====

Ingredients

=====

Name: POLYETHYLENE COPOLYMER

-----

Name: POLYETHYLENE HOMOPOLYMER

=====

Health Hazards Data

=====

Route Of Entry Inds - Inhalation: NO  
Skin: NO  
Ingestion: YES  
Carcinogenicity Inds - NTP: NO  
IARC: NO  
OSHA: NO  
Effects of Exposure: EYES: SOLID/DUST MAY CAUSE IRRITATION/CORNEAL INJURY.  
SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE HAZARD AT AMBIENT TEMPERATURE. INGESTION: MINIMAL TOXICITY.  
Explanation Of Carcinogenicity: NONE  
Signs And Symptoms Of Overexposure: EYES: SOLID/DUST MAY CAUSE



IRRITATION/CORNEAL INJURY. SKIN: NEGLIGIBLE HAZARD. INHALATION:  
NEGLIGIBLE

HAZARD AT AMBIENT TEMP. INGESTION: MINIMAL TOXICITY.

First Aid: SKIN: MOLTEN PLASTIC SHOULD BE TREATED W/COLD WATER BEFORE  
PLASTIC

IS REMOVED, THEN WRAP IN CLEAN GAUZE. OBTAIN MEDICAL ATTENTION IN ALL  
CASES.

=====  
Handling and Disposal  
=====

Spill Release Procedures: NON-HAZARDOUS, DEGRADE VERY SLOWLY & MAY  
BECOME A

NUISANCE. RECYCLE OLD/UNUSED PLASTIC WHEN POSSIBLE.

Waste Disposal Methods: DISPOSE OF IAW/FEDERAL, STATE & LOCAL  
REGULATIONS.

=====  
Fire and Explosion Hazard Information  
=====

Flash Point Text: 600-650F

Extinguishing Media: WATER

Fire Fighting Procedures: USE WATER TO COOL SURFACES. OTHER TYPES OF  
EXTINGUISHERS MAY BE USED. USE NIOSH APPROVED SCBA IN ENCLOSED AREAS.  
STATIC

DISCHARGE CAN BE GENERATED. (SEE SUPP)

=====  
Control Measures  
=====

Respiratory Protection: NONE

Ventilation: NONE

Protective Gloves: NONE

Eye Protection: NONE

Other Protective Equipment: NONE

=====  
Physical/Chemical Properties  
=====

Solubility in Water: INSOLUBLE

Appearance and Odor: THIN SOLID FILM/SHEET W/NO ODOR.

=====  
Reactivity Data  
=====

Stability Indicator: YES

Stability Condition To Avoid: TEMP >572F.

Materials To Avoid: NONE

Hazardous Decomposition Products: CO2, HYDROGEN DIOXIDE & UNDER LEAN  
OXYGEN

CONDITIONS, CO.

Hazardous Polymerization Indicator: NO

=====  
Toxicological Information  
=====

=====  
Ecological Information  
=====

=====  
MSDS Transport Information  
=====

Regulatory Information

Other Information

HAZCOM Label

Product ID: POLYETHYLENE SHEETING/BAGS/LAWN EDGING

Cage: 66830

Company Name: POLY-AMERICA INC

Street: 2000 W MARSHALL DR

City: GRAND PRAIRIE TX

Zipcode: 75051-2795

Health Emergency Phone: 214-647-4374

Label Required IND: Y

Date Of Label Review: 12/16/1998

Status Code: C

Label Date: 12/16/1998

Origination Code: G

Hazard And Precautions: EYES: SOLID/DUST MAY CAUSE IRRITATION/CORNEAL INJURY.

SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE HAZARD AT AMBIENT TEMPERATURE. INGESTION: MINIMAL TOXICITY.

EYES: SOLID/DUST MAY CAUSE

IRRITATION/CORNEAL INJURY. SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE

HAZARD AT AMBIENT TEMP. INGESTION: MINIMAL TOXICITY.

Disclaimer (provided with this information by the compiling agencies):  
This

information is formulated for use by elements of the Department of Defense.

The United States of America in no manner whatsoever expressly or implied

warrants, states, or intends said information to have any application, use or

viability by or to any person or persons outside the Department of Defense

nor any person or persons contracting with any instrumentality of the United

States of America and disclaims all liability for such use. Any person

utilizing this instruction who is not a military or civilian employee of the

United States of America should seek competent professional advice to verify

and assume responsibility for the suitability of this information to their

particular situation regardless of similarity to a corresponding Department

of Defense or other government situation.

FIBERLOCK TECHNOLOGIES INC -- FIBERSET FT & FIBERSET PM, 7470

=====

MSDS Safety Information

=====

FSC: 8010  
MSDS Date: 03/29/1994  
MSDS Num: CFRTX  
LIIN: 00N049779  
Product ID: FIBERSET FT & FIBERSET PM, 7470  
MFN: 02  
Responsible Party  
Cage: 0JYL9  
Name: FIBERLOCK TECHNOLOGIES INC  
Address: 630 PUTNAM AVE  
City: CAMBRIDGE MA 02139-0802  
Info Phone Number: 617-876-8020  
Emergency Phone Number: 617-876-8020;800-255-3924  
Published: Y

=====

Contractor Summary

=====

Cage: 0JYL9  
Name: FIBERLOCK TECHNOLOGIES INC  
Address: 630 PUTNAM AVE  
Box: 390432  
City: CAMBRIDGE MA 02139-0802  
Phone: 617-876-8020

=====

Ingredients

=====

Name: NON-HAZARDOUS INGREDIENTS  
OSHA PEL: N/K (FP N)  
ACGIH TLV: N/K (FP N)

=====

Health Hazards Data

=====

LD50 LC50 Mixture: LD50:(ORAL,RAT) >5.0 G/KG  
Route Of Entry Inds - Inhalation: NO  
Skin: NO  
Ingestion: NO  
Carcinogenicity Inds - NTP: NO  
IARC: NO  
OSHA: NO  
Effects of Exposure: ACUTE: INHALATION: VAPORS OR SPRAY MISTS MAY BE SLIGHTLY

IRRITATING TO EYES, NOSE, THROAT, AND MUCOUS MEMBRANE OF RESPIRATORY TRACT,

PRODUCING SYMPTOMS OF HEADACHE AND NAUSEA IN POORLY VENTILATED AREA S. SKIN

CONT: PROLONGED OR REPEATED CONT W/COATING MAY CAUSE SLIGHT SKIN IRRITATION.

EYE CONT: DIRECT (EFTS OF OVEREXP)

Explanation Of Carcinogenicity: NOT RELEVANT.

Signs And Symptoms Of Overexposure: HLTH HAZ: CONTACT; INCONSEQUENTIAL EYE

IRRITATION. INGESTION: MAY CAUSE NAUSEA AND INTENDED EXPECTORATION.

Medical Cond Aggravated By Exposure: NONE SPECIFIED BY MANUFACTURER.

First Aid: INHAL: REMOVE TO FRESH AIR. EYE CONT: IMMED FLUSH W/PLENTY OF WATER

FOR @ LST 15 MINS & CONSULT PHYS. SKIN CONT: WASH SKIN THOROUGHLY W/SOAP & WATER. IF DRENCHED, REMOVE & WASH CLTHG BEFORE REUSE. ING EST: IF SWALLOWED, CALL PHYS IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS PERSON. TREAT SYMPTOMATICALLY.

=====  
Handling and Disposal  
=====

Spill Release Procedures: KEEP UNNEC PEOPLE AWAY. FLOOR MAY BE SLIPPERY; USE

CARE TO AVOID FALLING. DIKE & CONTAIN MATL W/INERT MATL(E.G. SAND, EARTH). TRANSFER LIQUID TO CNTNRS FOR RECOVERY/DISP & SOLID DIKING MATL

TO SEPARAT E CNTNRS FOR DISP. KEEP SPILLS & CLEANING (SUPDAT)

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Methods: COATING & ANY CONTAMD DIKING MATL SHOULD BE THORO

AIR DRIED & COLLECTED INTO DRUMS. DRUMS SHOULD THEN BE SEALED & PROPERLY LBLD W/WASTE DESIGNATION & LANDFILL/INCINERATED ACCORDING TO CURRENT LOCAL, S TATE AND FEDERAL REGULATIONS.

Handling And Storage Precautions: MAX STORAGE TEMP 100F. KEEP CLOSURE TIGHT

& CONTAINER UPRIGHT TO PREVENT LEAKAGE. PRECAUTIONARY LABELING: "KEEP FROM FREEZING".

Other Precautions: DO NOT GET IN EYES. AVOID SKIN CONT. PVNT PRLNGD/RPTD BRTHG

OF VAPS/SPRAY MISTS. DO NOT HNDL UNTIL MFR'S SAFETY PRECAUTIONS & LABEL

INSTRUCTIONS HAVE BEEN READ & UNDERSTOOD. AVOID BREATHING SANDING DU ST.

=====  
Fire and Explosion Hazard Information  
=====

Flash Point Text: NON-COMBUSTIBLE

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).

Fire Fighting Procedures: USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire/Explosion Hazard: NONE SPECIFIED BY MANUFACTURER.

=====  
Control Measures  
=====

Respiratory Protection: NONE REQD IF GOOD VENT IS MAINTAINED. WEAR RESP (NIOSH-APPRVD/EQUIV) SUITABLE FOR CONCS & TYPES OF AIR CONTAMINANTS ENCOUNTERED. USE NIOSH APPRVD CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE

PARTICU LATES IN OPEN & RESTRICTED VENT (SUPDAT)

Ventilation: SUFFICIENT VENT, IN PATTERN & VOL, SHOULD BE PROVIDED TO KEEP

AIR CONTAMINANT CONC BELOW APPLIC EXPOSURE LIMITS. (SUPDAT)

Protective Gloves: IMPERVIOUS/NEOPRENE/RUBBER GLOVES.

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).

Other Protective Equipment: ANSI APPRVD EYE WASH & DELUGE SHOWER (FP N). USE

DISPOSABLE/IMPERVIOUS CLTHG IF WORK CLTHG CONTAM IS LIKELY. (SUPDAT)

Work Hygienic Practices: WASH HANDS BEFORE EATING, SMKG/USING WASHROOM.

FOOD/BEVERAGES SHOULD NOT BE CONSUMED ANYWHERE THIS PROD IS (SUPDAT) Supplemental Safety and Health: SPILL PROC: RUN-OFFS OUT OF MUNICIPAL SEWERS

& OPEN BODIES OF WATER. RESP PROT: AREAS. USE NIOSH APPRVD AIRLINE TYPE

RESP/HOOD IN CONFINED AREAS. VENT: ALL APPLIC AREAS SHOULD BE VENTILATED

I/A/W OSHA REG 29CFR PART 1910.94. OTHER PROT EQUIP: USE PROT CREAM IF

PRLNGD SKIN CONT IS LIKELY. HYGIENE PRACT: BEING APPLIED.

=====

#### Physical/Chemical Properties

=====

B.P. Text: 212F,100C

M.P/F.P Text: >32F,>0C

Vapor Pres: 760 @ 100C

Vapor Density: HVR/AIR

Spec Gravity: 1.02 (FP N)

Evaporation Rate & Reference: SLOWER (BUTYL ACETATE =1)

Solubility in Water: COMPLETE

Appearance and Odor: LIQUID, SLIGHT ODOR.

=====

#### Reactivity Data

=====

Stability Indicator: YES

Stability Condition To Avoid: NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: AVOID CONTACT WITH: STRONG OXIDIZING AGENTS (E.G. NITRIC

ACID, PERMANGANATES), ETC.

Hazardous Decomposition Products: SOME CARBON MONOXIDE.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT.

=====

#### Toxicological Information

=====

#### Ecological Information

=====

#### MSDS Transport Information

=====

#### Regulatory Information

=====

#### Other Information

=====

#### HAZCOM Label

=====

Product ID: FIBERSET FT & FIBERSET PM, 7470

Cage: 0JYL9

Company Name: FIBERLOCK TECHNOLOGIES INC

Street: 630 PUTNAM AVE

PO Box: 390432

City: CAMBRIDGE MA  
Zipcode: 02139-0802  
Health Emergency Phone: 617-876-8020;800-255-3924  
Label Required IND: Y  
Date Of Label Review: 11/25/1997  
Status Code: C  
Label Date: 11/25/1997  
Origination Code: G  
Eye Protection IND: YES  
Skin Protection IND: YES  
Signal Word: CAUTION  
Respiratory Protection IND: YES  
Health Hazard: Slight  
Contact Hazard: Slight  
Fire Hazard: None  
Reactivity Hazard: None  
Hazard And Precautions: ACUTE: INHALATION: VAPORS OR SPRAY MISTS MAY BE  
SLIGHTLY IRRITATING TO EYES, NOSE, THROAT, AND MUCOUS MEMBRANE OF  
RESPIRATORY  
TRACT, PRODUCING SYMPTOMS OF HEADACHE AND NAUSEA IN POORLY VENTILATED  
AREA S.  
SKIN CONT: PROLONGED OR REPEATED CONTACT WITH COATING MAY CAUSE  
SLIGHT SKIN  
IRRITATION. EYE CONT: DIRECT CONTACT; INCONSEQUENTIAL EYE IRRITATION.  
INGESTION: MAY CAUSE NAUSEA AND INTENDED EXPECTORAT ION. CHRONIC:  
NONE LISTED  
BY MANUFACTURER.

=====  
Disclaimer (provided with this information by the compiling agencies):  
This

information is formulated for use by elements of the Department of  
Defense.

The United States of America in no manner whatsoever expressly or  
implied

warrants, states, or intends said information to have any  
application, use or

viability by or to any person or persons outside the Department of  
Defense

nor any person or persons contracting with any instrumentality of the  
United

States of America and disclaims all liability for such use. Any  
person

utilizing this instruction who is not a military or civilian employee  
of the

United States of America should seek competent professional advice to  
verify

and assume responsibility for the suitability of this information to  
their

particular situation regardless of similarity to a corresponding  
Department

of Defense or other government situation.

**ATTACHMENT D**

**DEMOLITION AREA CAP INFORMATION**



Western Industries Inc.  
PO Box 428  
Yellowstone Hill  
Miles City, Montana 59301  
(406) 234-1680  
(406) 234-7774 Fax  
(800) 488-3592

## WIW 24

A high strength reinforcing high-density polyethylene scrim coated two sides with a uniquely engineered low-density black polyethylene blend.

### Product Specifications

Nominal Weave: 16 x 10  
Coating: 2 sides LDPE @ 2.5 mil thickness  
Color: Black  
Nominal Thickness: 24 Mils  
Weight: 13.7 oz./square yard

### Tensile Strength ASTM D751-95

Machine Direction Force: 506 lbs.  
Elongation: 30%

Cross Direction Force: 414 lbs.  
Elongation: 30%

### Trapezoidal Tear Strength ASTM D4533-91

Machine Direction Force: 132 lbs.  
Cross Direction Force: 110 lbs.

### UV Accelerated Weathering ASTM G154-98

More than 90% Strength retained after 2,000 hours\* exposure.

### Mullen Burst ASTM D751-95

795 psi

Note: all values are  $\pm 10\%$

\*QUV A-340 lamps 8 hrs UV @ 60°C, 4 hrs Condensation @ 40°C

The test data is based on an average taken over several production runs and should not be considered or interpreted as minimum or maximum values. Values are typical data and not limiting specifications.